Statistical Report on Internet Development in China

(July 2017)

CNNIC
中国互联网络信息中心
CHINA INTERNET NETWORK INFORMATION CENTER

Preface

In 1997 China's competent departments authorized China Internet Network Information Center (CNNIC) to organize relevant Internet entities to jointly carry out an Internet development survey. Ever since then, CNNIC has published 39 statistical reports on Internet development in China, and this report is the 40th report. All the reports of CNNIC have witnessed the whole development process of China's soaring Internet industry. With precise and objective data, the reports provide a significant basis for government departments and companies to master the development of Internet in China and make relevant decisions.

Since 1998 CNNIC has been issuing the Statistical Report on Internet Development in China at the beginning and middle of every year by convention. The Internet has growing influence on the overall social stability, economic development and cultural development, and the national strategy of cyber development has been moved forward. As a witness to Internet development, CNNIC correspondingly expands and deepens its survey on the whole society's application of Internet. The main body of this report consists of two parts: Basic Resources and Personal Application. The part of Basic Resources introduces the development of fundamental Internet resources in China; that of Personal Application is dedicated to the size and structure of Internet users, the environment for Internet access and the development of personal application of Internet. The report aims to accurately and objectively reflect the development of the Internet and informatization in China in the first half of 2017 through the aforesaid two aspects.

We hereby express our sincere gratitude to Internet users who have participated in our 40th statistical survey on Internet development. Meanwhile, we would like to extend our sincere thanks to the government, enterprises and other related institutions supporting the data collection in this Report.

China Internet Network Information Center (CNNIC)

July 2017

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Abstract

1. Basic Information

◇ As of the end of June 2017, China had 751 million Internet users, with an increase of 19.92 million in 6 months. The Internet penetration reached 54.3%, up 1.1 percentage points from the end of 2016.

◇ Up to June 2017, the number of mobile Internet users in China reached 724 million, an increase of 28.3 million from the end of 2016. The mobile netizens accounted for 96.3% of the total netizen population, while this percentage was 95.1% at the end of 2016.

◇ Up to June 2017, the number of Chinese rural netizens accounted for 26.7% of the national total, reaching 201 million.

◇ In June 2017, the proportion of Chinese netizens using desktops or laptops to access the Internet was 55.0% and 36.5% respectively. The utilization ratio of mobile phones as a means to access the Internet was 1.2 percentage points more than the end of 2016, reaching 96.3%, and this percentage was 28.7% for tablet computers and 26.7% for TV.

◇ As of June 2017, China had a total of 5.06 million websites, of which 2.7 million were under ".CN".

2. Trend and Features

The reserved amount of basic resources ranked among the top in the world, with Internet gateway bandwidth increasing greatly

As of June 2017, China had 338 million IPv4 addresses and 21,283 blocks/32 of IPv6 addresses. The number of IPv4 addresses and that of IPv6 addresses each ranked the second in the world; China had 5.06 million websites, a half-year increase of 4.8%; and the international Internet gateway bandwidth was 7,974,779Mbps, up 20.1% in six months.

The number of China's netizens reached 751 million and digital technologies facilitated the economic and social transformation

Up to June 2017, China had 751 million Internet users, a semi-annual increase of 19.92

million or 2.7%. The Internet penetration rate was 54.3%, a growth of 1.1 percentage points compared with the end of 2016. The deep integration of digital technology represented by the Internet was accelerated in the economic and social fields, which has become an essential driving force in facilitating China's consumption upgrade and economic and social transformation and enhancing the competiveness of China.

Mobile Internet users in China accounted for 96.3% of all netizens, strengthening the leading position of the mobile Internet

Up to June 2017, the number of mobile Internet users in China reached 724 million, an increase of 28.3 million from the end of 2016. The proportion of netizens using mobile phones to access the Internet climbed up from 95.1% in 2016 to 96.3%, and this proportion kept increasing. In the first half of 2017, the user scale of mobile phone applications increased and scenarios became more abundant. Specifically, as the applications of mobile online meal ordering increased the fastest of all mobile applications, its users numbered 274 million, an increase of 41.4% over the end of 2016; mobile payment users totaled 502 million, and, with distinct features in offline scenarios, 463 million netizens used their mobile phones to pay their offline bills.

Commercial trade applications grew at a fast pace, boosting the consumption-driven upgrading

The first half of 2017 saw a fast growth in the user scale of commercial trade applications; users of online shopping, online meal ordering and online travel booking grew respectively by10.2%, 41.6% and 11.5%. The online shopping market was characterized by consumption upgrading. Users have gradually preferred new types of premium and intelligent consumer goods. Meanwhile, the online-offline integration has expanded in data and technology applications and in various senarios. Huge user data resources accumulated by various platforms have received broad attention.

The Internet financing market became standardized and the expansion of offline payment remained a hot issue

In the first half of 2017, the number of Internet financing users reached 126 million, with a half-year growth rate of 27.5%. The online advantages and offline advantages in the aspects of traffic, technology and financial products and services have been integrated in the Internet

financing field. The confrontation and competition between online financing and offline financing has transformed to win-win cooperation. The yield rate of Internet lending products continued to decline, and the industry became standardized. The offline payment has remained a hot market issue, as netizens further developed the habit of using mobile payment apps to pay bills when shopping at physical stores such as supermarkets and convenience stores. 61.6% of netizens payed bills through mobile payment when doing offline shopping. While exploiting the domestic market, China's online payment companies also developed the overseas market with huge potentials.

The user scale of online education and online car-hailing service maintained a growing momentum and shared bike became to serve as a new trip mode

As of June 2017, the number of users in all segmented fields of public service grew to some extent, with users in online education, online taxi-hailing, online tailored taxi-hailing and fast ride, and shared bike numbering 144 million, 278 million, 217 million and 106 million respectively. The online education market developed rapidly, and the upgrading of the industry was driven by artificial intelligence technologies; the online car-hailing market experienced the stage of rapid capital-driven expansion, and embarked on the path of standardized development; shared bike enriched citizens' choices of going out, and driven by technology and capital the industry was blooming.

Basic Resources

Chapter I Basic Internet Resources

I. An Overview of Basic Internet Resources

Up to June 2017, China had 338 million IPv4 addresses and 21,283 blocks/32 of IPv6 addresses.

There were altogether 5.06 million websites, a semi-annual increase of 4.8%, among which 2.7 million were ".CN" websites.

International Internet gateway bandwidth reached 7,974,779 Mbps, up 20.1% in 6 months.

Table 1 Comparison - Basic Internet Resources in China   from Dec. 2016 to Jun. 2017

	December 2016	June 2017	Semi-annual increment	Semi-annual growth rate
IPv4	338,102,784	338,451,968	349,184	0.1%
IPv6 (block/32)	21,188	21,283	95	0.4%
Website	4,823,918	5,057,808	233,890	4.8%
Wherein, .CN website	2,587,365	2,702,141	114,776	4.4%
International Internet gateway bandwidth (Mbps)	6,640,291	7,974,779	1,334,488	20.1%

II. IP Address

As of June 2017, the number of IPv6 addresses in China had reached 21283 blocks /32, a half-year increase of 0.4%.

The Number of IPv6 Addresses in China

block/32

| | 429 | 9398 | 12499 | 12535 | 14607 | 16670 | 16694 | 18797 | 19338 | 20594 | 20781 | 21188 | 21283 |

2011.6 2011.12 2012.6 2012.12 2013.6 2013.12 2014.6 2014.12 2015.6 2015.12 2016.6 2016.12 2017.6

Source: CNNIC Statistical Survey on Internet Development in China   2017.6

Figure 1 The Number of IPv6 Addresses in China

All IPv4 addresses had been assigned by February 2011 and since then the total number of IPv4 addresses in China had been basically stable, being 338.45 million up to June 2017.
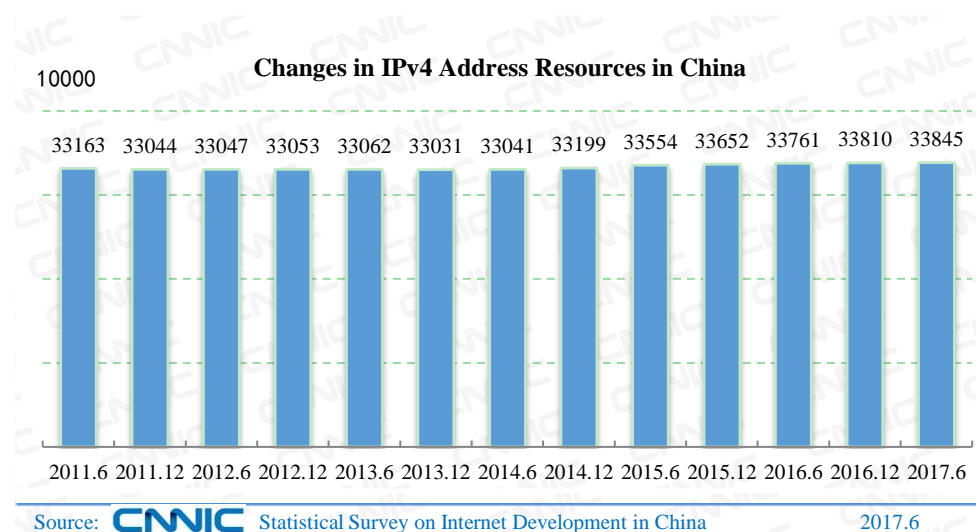
Changes in IPv4 Address Resources in China

10000

33163 33044 33047 33053 33062 33031 33041 33199 33554 33652 33761 33810 33845

2011.6 2011.12 2012.6 2012.12 2013.6 2013.12 2014.6 2014.12 2015.6 2015.12 2016.6 2016.12 2017.6

Source: CNNIC Statistical Survey on Internet Development in China   2017.6

Figure 2 Changes in IPv4 Address Resources in China

III. Websites

As of June 2017, China had 5.06 million websites[1], representing a half-year increase of 4.8%.

The Number of Websites in China

10000

600

500

400

300

200

100

0

250   268   294   320   273   335   357   423   454   482   506

2012.6 2012.12 2013.6 2013.12 2014.6 2014.12 2015.6 2015.12 2016.6 2016.12 2017.6

Source: CNNIC Statistical Survey on Internet Development in China   2017.6

Figure 3 The Number of Websites in China

Note: Websites with the domain name of ".EDU.CN" are excluded.

IV. International Internet Gateway Bandwidth

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[1] It refers to the websites whose domain name registrants are within the territory of the P.R.C.

Up to June 2017, the international Internet gateway bandwidth of China was 7,974,779 Mbps , up 20.1% in six months.
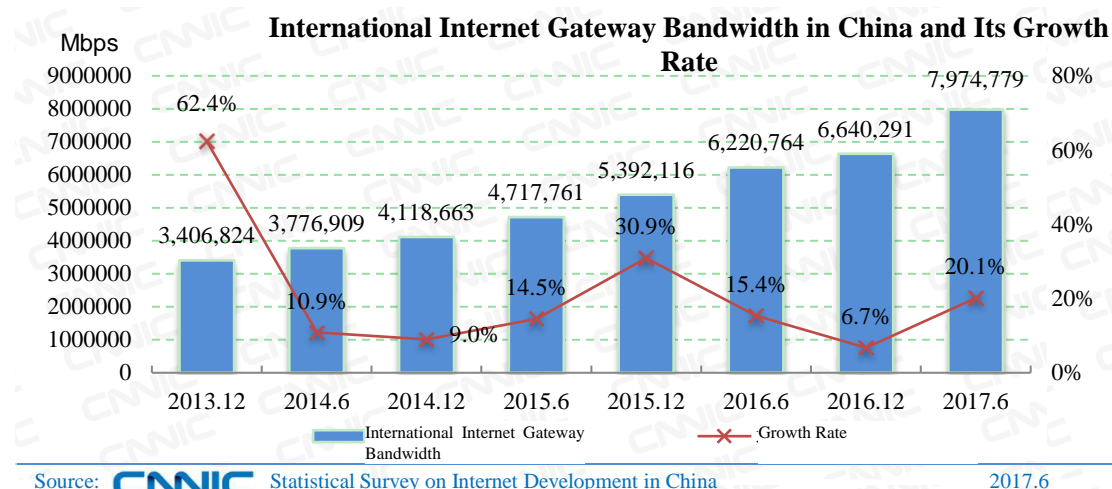

Figure 4 International Internet Gateway Bandwidth in China and Its Growth Rate

Table 2. International Internet Gateway Bandwidths of Backbone Networks

	International Internet gateway bandwidths (Mbps)
China Telecom	4,451,036
China Unicom	2,200,947
China Mobile	1,208,108
China Education and Research Network	61,440
China Science and Technology Network	53,248
China International Economy and Trade Net	0
Total	7,974,779

Personal Application

Chapter II The Size and Structure of Internet Users

I. The Size of Internet Users

(I) The Overall Size of Internet Users

In June 2017 China had 751 million Internet users, with a half-year increase of 19.92 million. The Internet penetration rate was 54.3%, a growth of 1.1 percentage points compared with the end of 2016.

The Size of Chinese Internet Users and Internet Penetration

Source: CNNIC Statistical Survey on Internet Development in China   2017.6
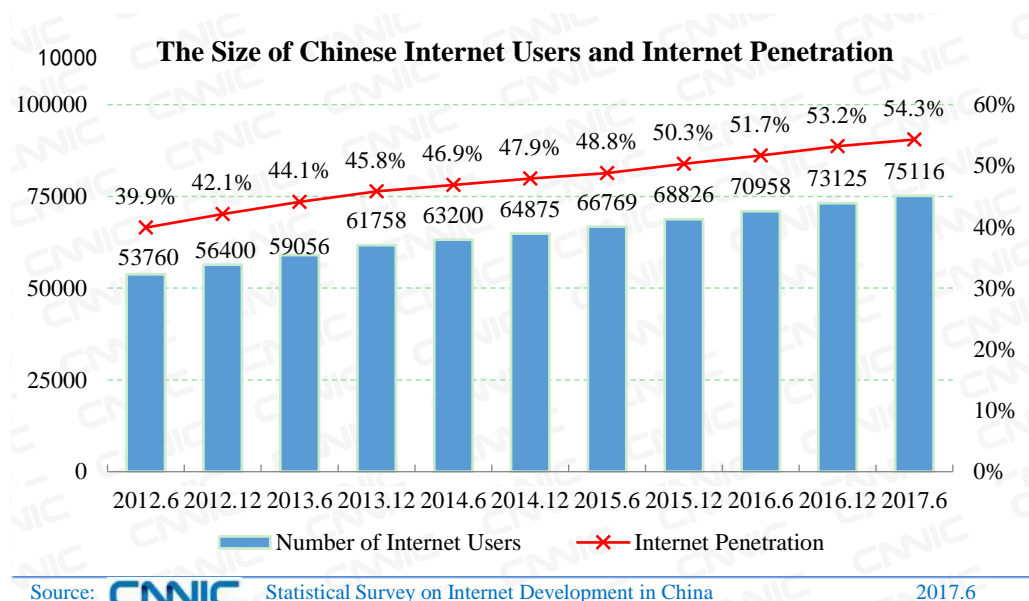
Figure 5 The Size of Chinese Internet Users and Internet Penetration

In the first half of 2017, the size of China's Internet users grew stable and the Internet industry continued developing steadily. The Internet has become an important force in promoting China's economic and social development. The deep integration of digital technology represented by the Internet is accelerated in the economic and social fields, which becomes an essential driving force in facilitating China's consumption upgrade and economic and social transformation and enhancing the competiveness of China. Meanwhile, the rapid development of e-government services, ride-sharing services and mobile payment has given a powerful impetus to improve the people's livelihood and the social well-being.

With the rapid development of China's Internet, the supervision system for related industries has been gradually improved. In the first half of 2017, the *Implementation Rules on the Licensing Management of the Internet News and Information Services* released by the Cyberspace Administration of China specified requirements for the standardized management of websites, applications, instant messaging tools, microblog, living streaming and other Internet services, in order to further improve the standardized and scientific management of Internet services and promote the sound and orderly development of the industry.

(II) The Size of Mobile Internet Users

Up to June 2017, the number of mobile Internet users in China reached 724 million, an increase of 28.3 million from the end of 2016. The mobile netizens accounted for 96.3% of the total netizen population, while this percentage was 95.1% at the end of 2016.
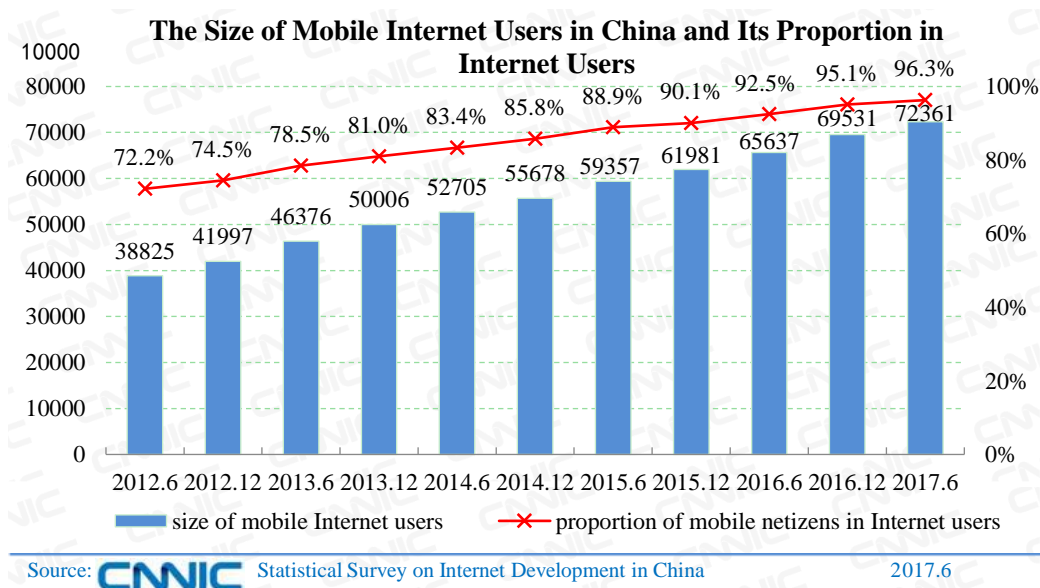

Figure 6 The Size of Mobile Internet Users in China and Its Proportion in Internet Users

As China's mobile Internet enters a stage of stable development, the overall development of the industry is characterized by quality content, integrated platform and innovative model. First, all mobile application platforms have further improved the quality of content, and sought for differentiated competitive edge by focusing on content segmentation; secondly, various comprehensive applications have been continuously combined with the functions of social networking, information services, transport and public services to create an integrated service

platform, expanding the service scope and influence; finally, the mobile Internet industry has been developed from the business transformation stage to the model innovation stage, guiding the intelligent society to develop from smart manufacturing to sharing economy; the massive data generated by mobile Internet and the application of big data technologies provide more possibilities to the product optimization across the society.

(III) The Size of Rural Internet Users

Up to June 2017, China had 201 million rural Internet users, accounting for 26.7% of the national total; the number of urban Internet users was 550 million, accounting for 73.3%. The number of urban Internet users increased 19.88 million from the end of 2016, while its semi-annual increment was 3.7%.

Urban-rural Structure of Internet Users

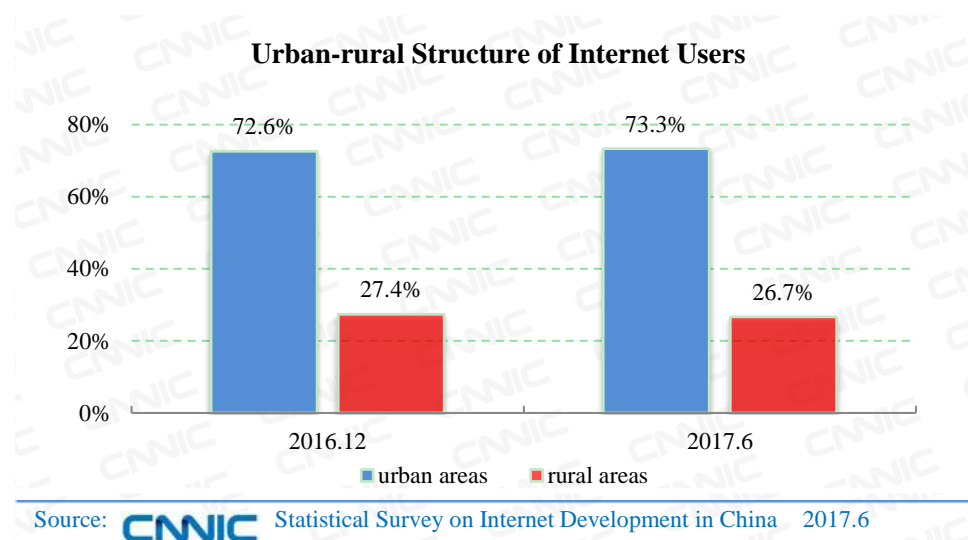Source: CNNIC Statistical Survey on Internet Development in China 2017.6

Figure 7 Urban-rural Structure of Internet Users

Although Internet penetration both in urban and rural areas keeps improving, there remains a wide urban-rural gap. Regarding the penetration and access,the Internet penetration in rural areas rose to 34.0% but was still 35.4 percentage points lower than that in urban areas. As for Internet applications, the difference in the utilization rate of instant messaging between urban and rural Internet users was the smallest, which was about 2 percentage points; the utilization rates of applications in commercial trade, payment, and news and information services varied widely across rural and urban areas; and the gap in the utilization rate of online meal ordering was the largest, reaching 26.8%. There are still huge development potentials for the rural Internet market.
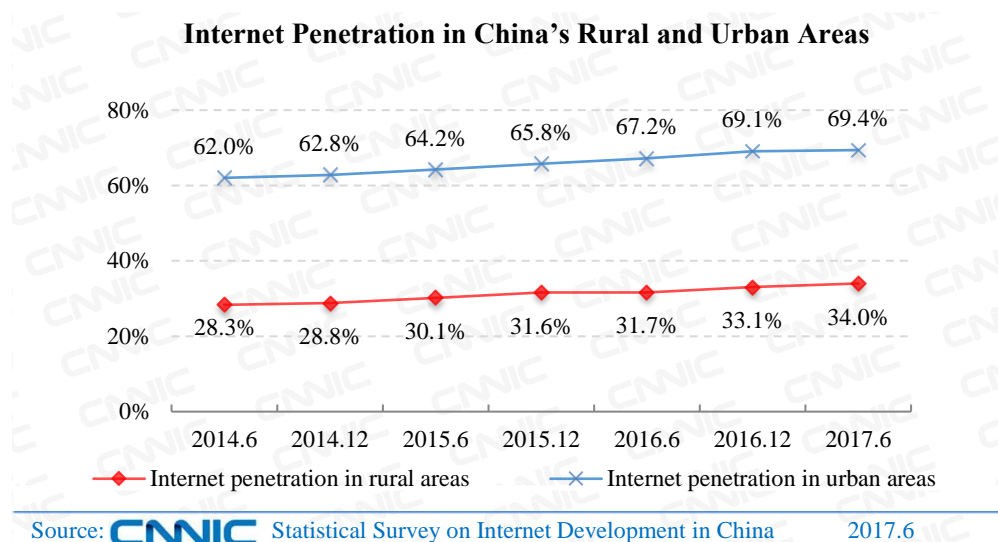
Internet Penetration in China's Rural and Urban Areas

Source: CNNIC Statistical Survey on Internet Development in China   2017.6

Figure 8 Internet Penetration in China's Rural and Urban Areas

(IV) Analysis of Non-Internet Users' Status Quo

Up to June 2017 China had 632 million non-netizens. Shortage of Internet skills and limited literacy level are major factors preventing non-netizens from accessing the Internet. The survey finds that 52.6% of non-netizens don't access the Internet due to shortage of knowledge about computer or the Internet and 26.9% of those not because they don't master pinyin or the Chinese phonetic alphabet; 11.2% of non-Internet users without the demand for or the interest in the Internet don't get access to the Internet; 9.3% of non-netizens without computers and 6.2% having no local access cannot access the Internet.
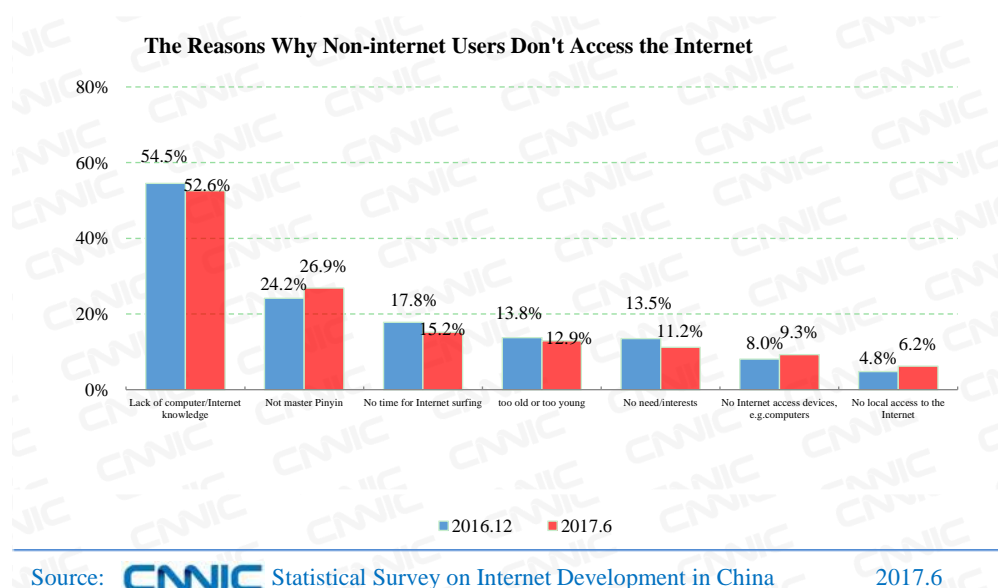
The Reasons Why Non-internet Users Don't Access the Internet

Source: CNNIC Statistical Survey on Internet Development in China   2017.6

Figure 9The Reasons Why Non-internet Users Don't Access the Internet

To prompt non-netizens to surf the Internet is to improve their Internet skills, reduce the Internet access cost and spur the demand of non-netizens for the Internet. Up to June 2017, of non-netizens being willing to access the Internet, 22.1% do so because of free Internet training, 21.8% reduced Internet charge and 19.3%　accessible Internet devices; of non-netizens choosing to access the Internet for their demands, 24.8% do so in order to communicate with others, 19.6% increase their incomes and 14.6% do online shopping.
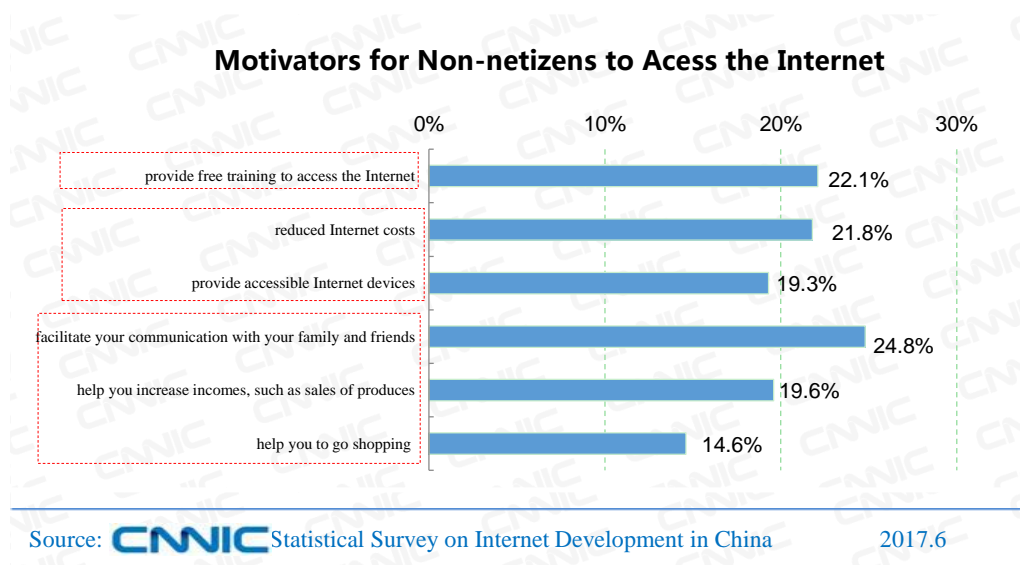
Motivators for Non-netizens to Acess the Internet

provide free training to access the Internet	22.1%
reduced Internet costs	21.8%
provide accessible Internet devices	19.3%
facilitate your communication with your family and friends	24.8%
help you increase incomes, such as sales of produces	19.6%
help you to go shopping	14.6%

Source: CNNIC Statistical Survey on Internet Development in China　2017.6

Figure 10 Motivators for Non-netizens to Access the Internet

II. The Structure of Internet Users

(I) Gender Structure

Up to June 2017, the male-to-female ratio was 52.4:47.6 among Chinese Internet users, and was 51.2:48.8 in the total population of China, which shows that Chinese netizens' gender structure tends to be balanced and is basically in line with the sex ratio of the total population.

Gender Structure of Chinese Internet Users

national ratio of male to female ■ ratio of male to female among netizens

Source: CNNIC Statistical Survey on Internet Development in China   2017.6
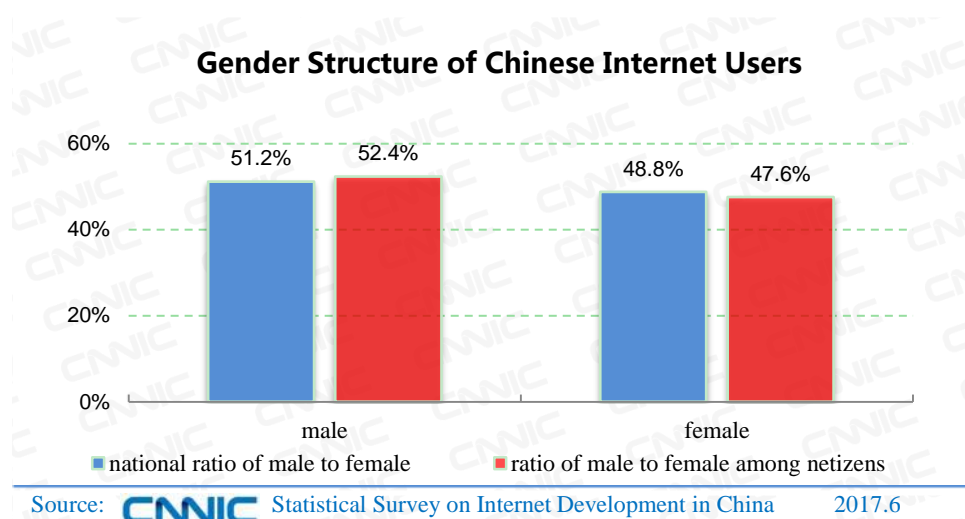
Figure 11 Gender Structure of Chinese Internet Users

(II) Age Structure

Up to June 2017, 72.1% of Chinese Internet users were aged 10-39. Specifically, 29.7% of Chinese netizens were aged 20-29, 19.4% aged 10-19 and 23.0% aged 30-39. So, the age group of 10-39 was still the largest part of Chinese netizens. The proportion of Internet users above 40 years of age was up 1.7 percentage points over the end of 2016, suggesting that the Internet continued to penetrate into the older population.

Age Structure of Chinese Internet Users

■ 2016.12 ■ 2017.6

Source: CNNIC Statistical Survey on Internet Development in China   2017.6
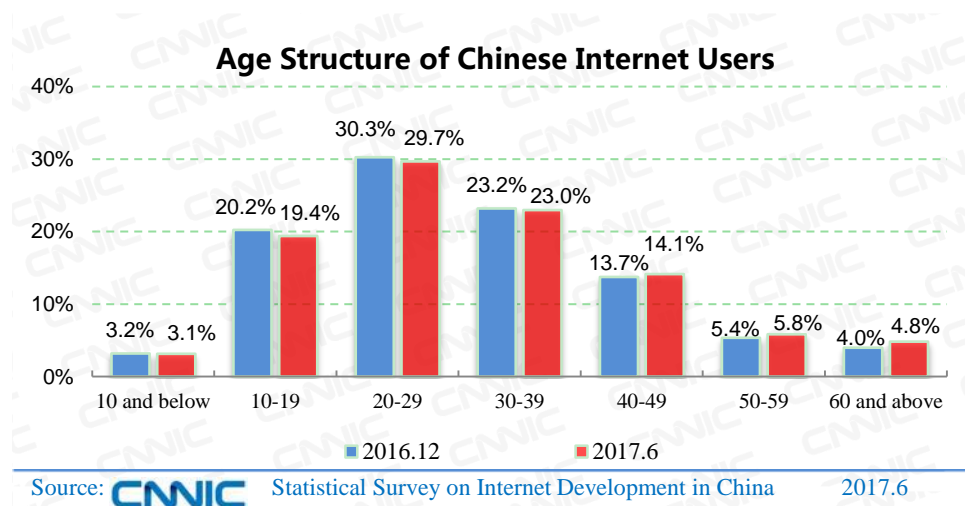
Figure 12 Age Structure of Chinese Internet Users

(III) Education Structure

Up to June 2017, most Chinese netizens were those with a secondary education level: junior high school students constituted 37.9% of the Chinese netizen population, and this percentage was

25.5% for senior high school/secondary specialized school/technical school students. The education structure of netizens was similar to that of the end of 2016.

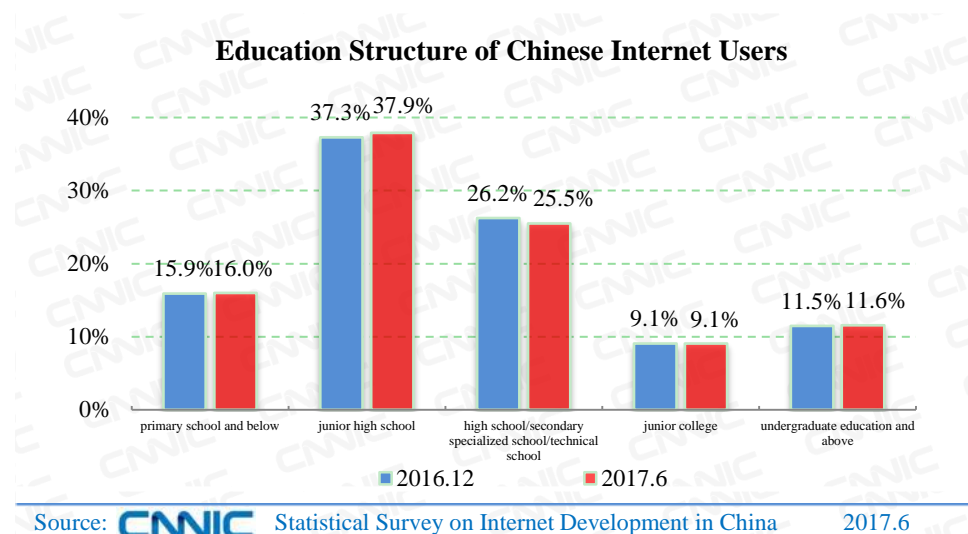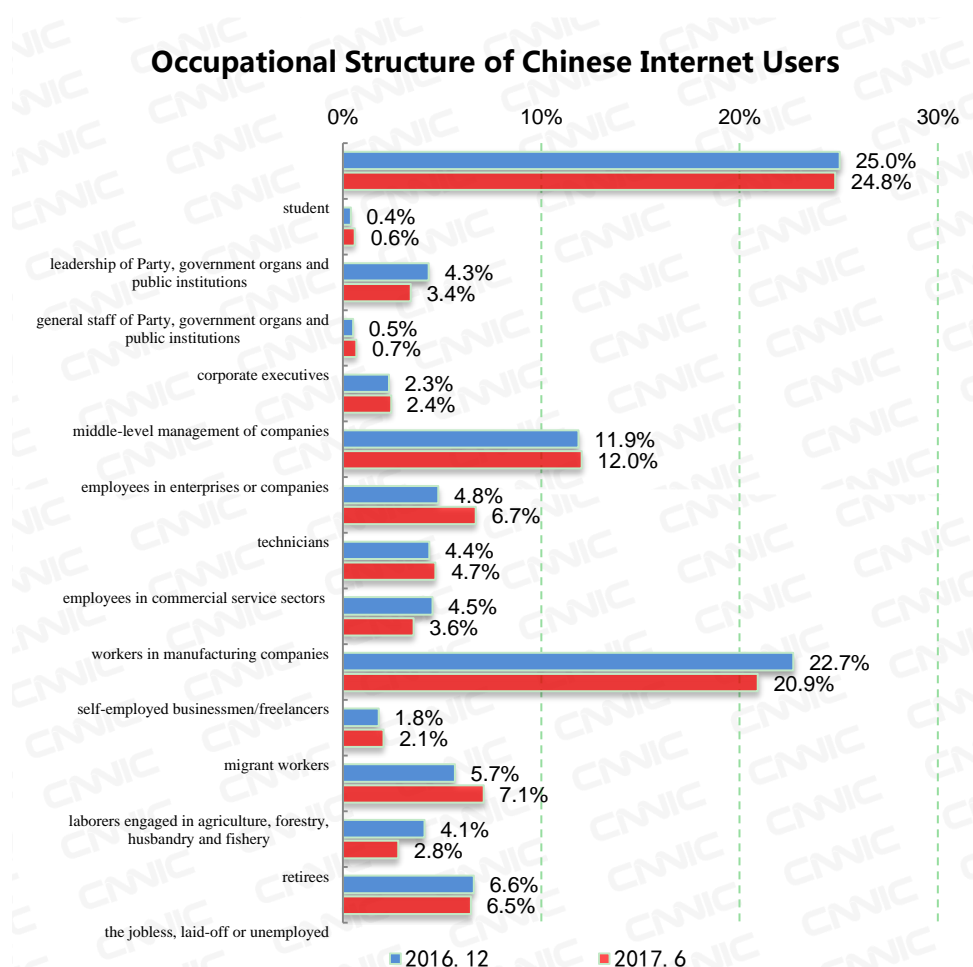
Figure 13 Education Structure of Chinese Internet Users

(IV) Occupational Structure

Up to June 2017, of Chinese Internet users, 24.8% were middle school students; 20.9% were self-employed businessmen/freelancers; and 15.1% were enterprise managers/ordinary staff members.

Occupational Structure of Chinese Internet Users

	2016. 12	2017. 6
student	25.0%	24.8%
leadership of Party, government organs and public institutions	0.4%	0.6%
general staff of Party, government organs and public institutions	4.3%	3.4%
corporate executives	0.5%	0.7%
middle-level management of companies	2.3%	2.4%
employees in enterprises or companies	11.9%	12.0%
technicians	4.8%	6.7%
employees in commercial service sectors	4.4%	4.7%
workers in manufacturing companies	4.5%	3.6%
self-employed businessmen/freelancers	22.7%	20.9%
migrant workers	1.8%	2.1%
laborers engaged in agriculture, forestry, husbandry and fishery	5.7%	7.1%
retirees	4.1%	2.8%
the jobless, laid-off or unemployed	6.6%	6.5%

Source: CNNIC Statistical Survey on Internet Development in China 2017.6

Figure 14 Occupational Structure of Chinese Internet Users

(V) Income Structure

Up to June 2017, the proportions of netizens with a monthly income[2] of RMB2, 001-3,000 and RMB3, 001-5,000 were 15.8% and 22.9%, respectively. The proportions of these income groups were high among all income groups. Netizens' income is growing as the economy develops. The proportion of netizens with a monthly income of above RMB5, 000 rose by 2.1 percentage points from the end of 2016.

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[2]Specifically, the income of students includes living allowances provided by families, salary earned from work-study programs, scholarships and others. The income of peasants includes the living allowances provided by children, income of agricultural production, and government subsidy. The income of those who are jobless, laid off or unemployed includes the living allowances provided by children, government relief and subsidy, pension, and subsistence allowances. The income of retirees includes the living allowances provided by children and pension.

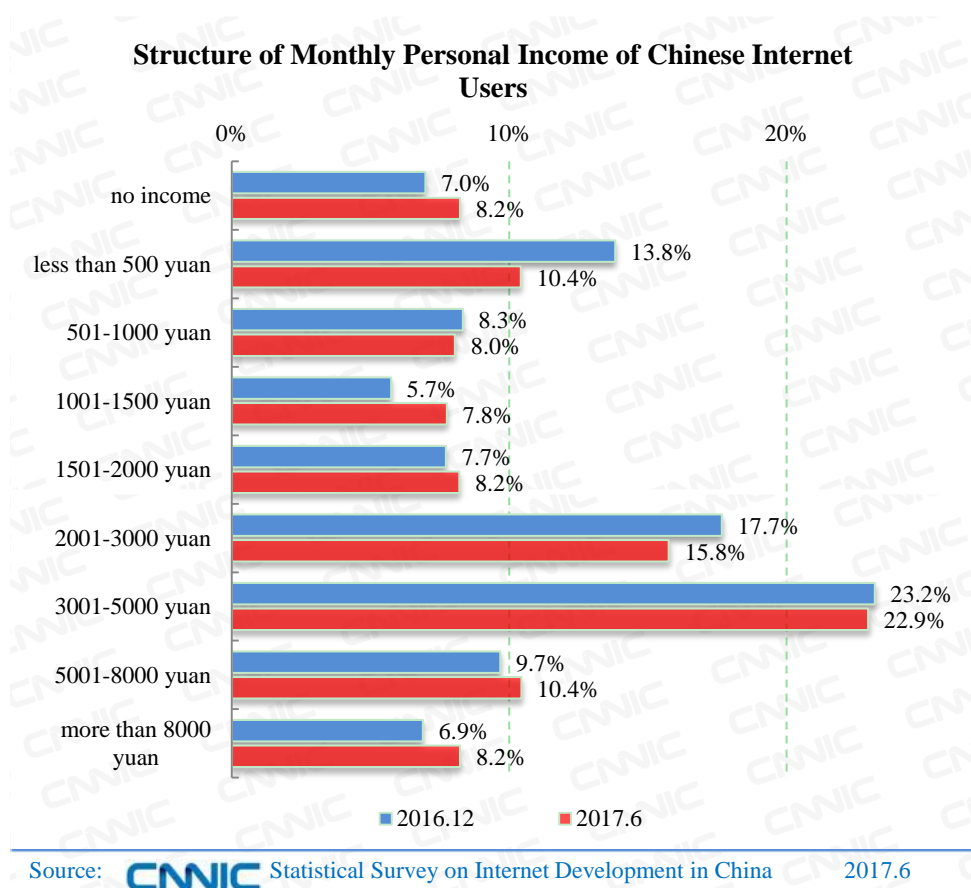**Structure of Monthly Personal Income of Chinese Internet Users**

Figure 15 Structure of Monthly Personal Income of Chinese Internet Users

Chapter III Internet Access Environment

I. Internet Access Devices

In the first half of 2017, the proportion of the Chinese netizens using mobile phones and TVs to access the Internet increased compared to the data at the end of 2016. Up to June 2017, 96.3% of Chinese netizens accessed the Internet via mobile phones, up by 1.2 percentage points from the end of 2016. With rapid development of the smart home industry, 26.7% of Chinese netizens used TV sets as an entertainment device to access the Internet at home, up by 1.7 percentage points from the end of 2016. The proportions of Chinese netizens using desktops, laptops and tablets to access the Internet were 55.0%, 36.5% and 28.7% respectively, down by 5.1, 0.3 and 2.8 percentage points from the end of 2016, respectively.

Usage of Internet Access Devices

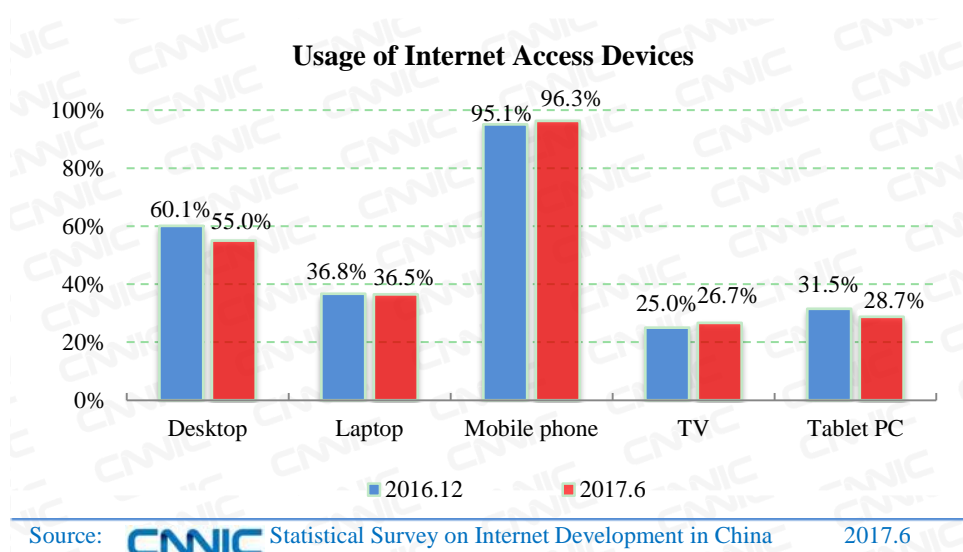Source: CNNIC Statistical Survey on Internet Development in China 2017.6

Figure 16 Usage of Internet Access Devices

II. Venues of Internet Access

Up to June 2017, 85.9% of Chinese netizens accessed the Internet via computers at home, down by 1.7 percentage points from the end of 2016; the proportion of netizens who did so at the workplace, Internet cafe or public places all edged up while that of those who did so at schools slipped slightly.
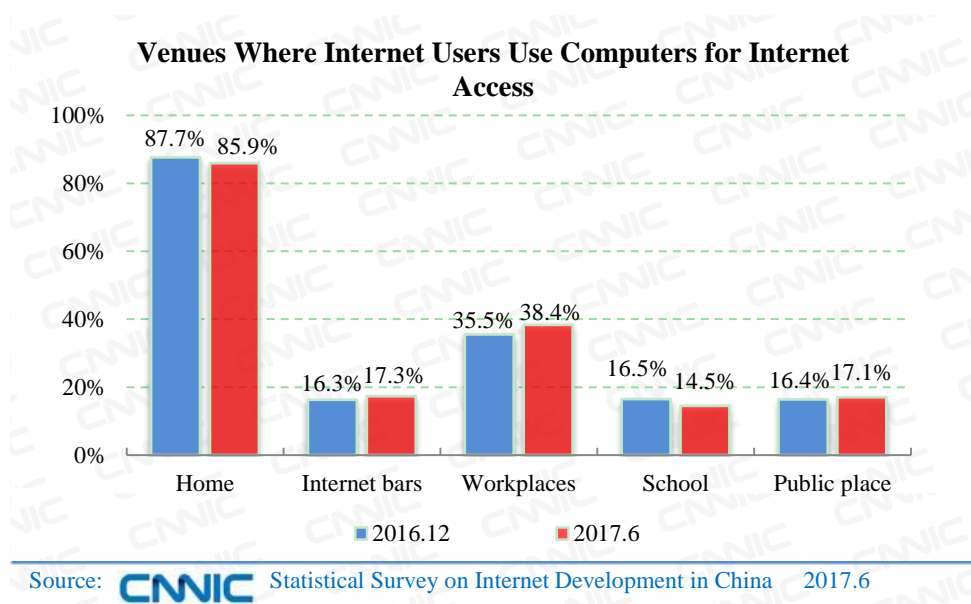
Venues Where Internet Users Use Computers for Internet Access

Home: 87.7% (2016.12), 85.9% (2017.6)
Internet bars: 16.3% (2016.12), 17.3% (2017.6)
Workplaces: 35.5% (2016.12), 38.4% (2017.6)
School: 16.5% (2016.12), 14.5% (2017.6)
Public place: 16.4% (2016.12), 17.1% (2017.6)

■ 2016.12 ■ 2017.6

Source: CNNIC Statistical Survey on Internet Development in China   2017.6

Figure 17 Venues Where Internet Users Use Computers for Internet Access

III. Online Duration

In the first half of 2017, netizens in China on average spent 26.5 hours a week online, basically the same with that in 2016.

Weekly Average Online Duration of Internet Users

hour

2013.6: 21.7
2013.12: 25.0
2014.6: 25.9
2014.12: 26.1
2015.6: 25.6
2015.12: 26.2
2016.6: 26.5
2016.12: 26.4
2017.6: 26.5

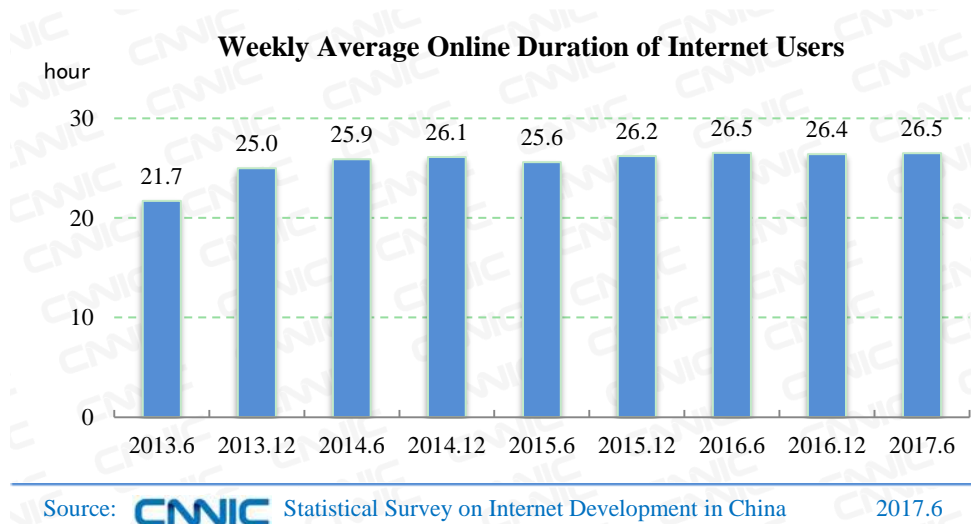Source: CNNIC Statistical Survey on Internet Development in China   2017.6

Figure 18 Weekly Average Online Duration of Internet Users

Chapter IV The Development of Personal Internet Applications

In the first half of 2017, personal Internet applications developed fast and The user scale of all applications kept growing. Online meal ordering and Internet financing were the most rapidly growing applications, up by 41.6% and 27.5% from the end of 2016, respectively; online shopping maintained a fast growth, with a semi-annual growth rate of 10.2%; in terms of mobile phone applications, users of mobile online meal ordering and mobile online education increased significantly, with a semi-annual growth rate of 41.4% and 22.4% respectively.

The user scale of basic applications tended to be stable, and the applications focused on providing accurate and high-quality content services

The user scale of basic Internet applications such as instant messaging, search engine and online news, grew steadily in the first half of 2017. The differentiated marketing in the instant messaging sector became obvious, and leading enterprises focused on the potential exploration of data inflows, linkage of content with services, and maturity of the business model. An increasing number of search engine applications were used at mobile ends. Since the application effects of artificial intelligence had not yet improved user experience, the growth of market was faced with much pressure. Online news applications featured three trends, such as information being aggregated on platforms, cross-industry competition becoming more fierce, and technology seen as the core. All kinds of social networking applications made efforts both internally and externally. They focused on high-quality content production, and actively cooperated with many industries.

Commercial trade applications grew at a fast pace, boosting the consumption-driven upgrading

The first half of 2017 saw a fast growth in the user scale of commercial trade applications; users of online shopping, online meal ordering and online travel booking grew respectively by10.2%, 41.6% and 11.5%. The online shopping market was characterized by consumption upgrading. Users have gradually preferred new types of premium and intelligent consumer goods. Meanwhile, the online-offline integration has expanded in data and technology applications and in

various senarios. Huge user data resources accumulated by various platforms have received broad attention. The online meal ordering industry developed more mature, and the platforms exploited existing business and expanded horizontally. But food and traffic safety are still challenges hindering the industry. The upgrading of national consumption stimulated more demand for travel booking, and more efforts were made to "enhance direct selling and reduce agent distribution". On the one hand, air ticket booking platforms aggregated more data inflows. On the other hand, hotel reservation platforms expanded the international hotel business to enhance profitability.

The Internet financing market became standardized and the expansion of offline payment remained a hot issue

In the first half of 2017, the online advantages and offline advantages in the aspects of traffic, technology and financial products and services have been integrated in the Internet financing field. The confrontation and competition between online financing and offline financing has transformed to win-win cooperation. The yield rate of Internet lending products continued to decline, and the industry became standardized. The offline payment has remained a hot market issue, as netizens further developed the habit of using mobile payment apps to pay bills when shopping at physical stores such as supermarkets and convenience stores. While exploiting the domestic market, China's online payment companies also developed the overseas market with huge potentials.

The user scale of online entertainment applications grew steadily, and the industry became more standardized

The first half of 2017 saw the growth in users of mobile entertainment applications; users of applications for mobile online music, videos, games and literature all grew by more than 4%. The increase rate of mobile games users reached 9.6%. The revenue of online games industry grew significantly and the game industry was increasingly interlinked with other sectors of the IP industry chain. In the first half of 2017, the online literature industry showed two major development features: being more ecological and internationalized. Royalties were expected to be the core of the industry's revenue growth. In the online video industry, major video websites laid out the new ecology of pan-entertainment content including literature, comics, film and television, and games and their derivative products, and the overall collaboration capability of ecological platforms was highlighted. Live streaming services featuring live show and live game streaming

maintained a booming tendency, and the standardized operation and quality content are the two main directions of the live streaming industry.

The user scale of online education and online car-hailing service maintained a growing momentum and shared bike became to serve as a new trip mode

As of June 2017, the number of users in all segmented fields of public service grew to some extent, with users in online education, online taxi-hailing, online tailored taxi-hailing and fast ride, and shared bike numbering 144 million, 278 million, 217 million and 106 million respectively. The online education market developed rapidly, and the upgrading of the industry was driven by artificial intelligence technologies; the online car-hailing market experienced the stage of rapid capital-driven expansion, and embarked on the path of overall standardized development; shared bike enriched citizens' choices of going out, and driven by technology and capital the industry was blooming.

Table 3 Usage Rate of Internet Applications by Chinese Netizens Dec. 2016 - Jun. 2017

Applications	2017.6		2016.12		Semi-annual growth rate
	Number of Internet users (10,000)	The percentage of Internet users using the application	Number of Internet users (10,000)	The percentage of Internet users using the application	
Instant messaging	69,163	92.1%	66,628	91.1%	3.8%
Search engine	60,945	81.1%	60,238	82.4%	1.2%
Online news	62,458	83.1%	61,390	84.0%	1.7%
Online video	56,482	75.2%	54,455	74.5%	3.7%
Online music	52,413	69.8%	50,313	68.8%	4.2%
Online payment	51,104	68.0%	47,450	64.9%	7.7%
Online shopping	51,443	68.5%	46,670	63.8%	10.2%
Online games	42,164	56.1%	41,704	57.0%	1.1%
Online banking	38,262	50.9%	36,552	50.0%	4.7%
Online literature	35,255	46.9%	33,319	45.6%	5.8%
Travel booking[3]	33,363	44.4%	29,922	40.9%	11.5%

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[3]Travel booking: It is defined in this report as booking air tickets, hotel rooms, train tickets and holiday traval products via the Internet in the last 6 months.

Applications	2017.6		2016.12		
	Number of Internet users (10,000)	The percentage of Internet users using the application	Number of Internet users (10,000)	The percentage of Internet users using the application	Semi-annual growth rate
E-mail	26,306	35.0%	24,815	33.9%	6.0%
Forum/bbs	13,207	17.6%	12,079	16.5%	9.3%
Internet financing	12,614	16.8%	9,890	13.5%	27.5%
Online stock or fund trade	6,848	9.1%	6,276	8.6%	9.1%
Microblog	29,071	38.7%	27,143	37.1%	7.1%
Map query	46,998	62.6%	46,166	63.1%	1.8%
Online meal ordering	29,534	39.3%	20,856	28.5%	41.6%
Online education	14,426	19.2%	13,764	18.8%	4.8%
Online taxi-hailing service	27,792	37.0%	22,463	30.7%	23.7%
Online car-hailing service or fast ride	21,733	28.9%	16,799	23.0%	29.4%
Live streaming[4]	34,259	45.6%	-	-	
Shared bike	10,612	14.1%	-	-	

Table 4 Usage Rate of Mobile Internet Applications by Chinese Netizens Dec. 2016 - Jun. 2017

Applications	2017.6		2016.12		
	Number of Internet users (10,000)	The percentage of Internet users using the application	Number of Internet users (10,000)	The percentage of Internet users using the application	Semi-annual growth rate
Mobile instant messaging	66,778	92.3%	63,797	91.8%	4.7%
Mobile netnews	59,615	82.4%	57,126	82.2%	4.4%
Mobile search	59,271	81.9%	57,511	82.7%	3.1%

[4]Live streaming services surveyed for this report include live sport broadcasting, host live show, live game streaming, and live concert streaming.

Applications	2017.6		2016.12		
	Number of Internet users (10,000)	The percentage of Internet users using the application	Number of Internet users (10,000)	The percentage of Internet users using the application	Semi-annual growth rate
Mobile online music	48,929	67.6%	46,791	67.3%	4.6%
Mobile online video	52,523	72.6%	49,987	71.9%	5.1%
Mobile online payment	50,185	69.4%	46,920	67.5%	7.0%
Mobile online shopping	48,042	66.4%	44,093	63.4%	9.0%
Mobile online games	38,546	53.3%	35,166	50.6%	9.6%
Mobile banking	35,013	48.4%	33,357	48.0%	5.0%
Mobile online literature	32,668	45.1%	30,377	43.7%	7.5%
Mobile travel booking	29,897	41.3%	26,179	37.7%	14.2%
Mobile mail	21,539	29.8%	19,713	28.4%	9.3%
Mobile forum /bbs	11,260	15.6%	9,739	14.0%	15.6%
Mobile online educational courses	11,990	16.6%	9,798	14.1%	22.4%
Mobile microblog	25,860	35.7%	24,086	34.6%	7.4%
Mobile map and mobile navigation	44,091	60.9%	43,123	62.0%	2.2%
Mobile online meal ordering	27,412	37.9%	19,387	27.9%	41.4%

I. The Development of Basic Applications

1.1 Instant messaging

Up to June 2017, China had 692 million users of instant messaging, accounting for 92.1% of the total netizen population and representing an increment of 25.35 million from the end of 2016. In particular, users of mobile instant messaging reached 668 million, constituting 92.3% of mobile netizens and recording an increase of 29.81 million from the end of 2016.

The User Scale and Usage Rate of Instant Messaging/Mobile Instant Messaging Dec. 2016 – Jun. 2017
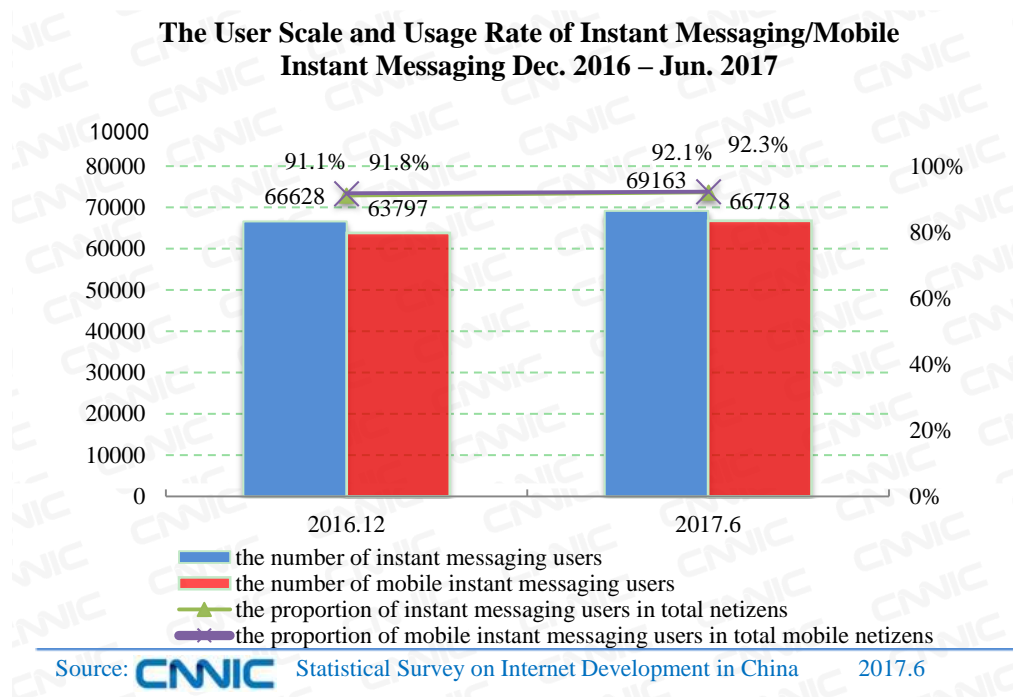

Figure 19 The User Scale and Usage Rate of Instant Messaging/Mobile Instant Messaging Dec. 2016 – Jun. 2017

The polarization of the instant messaging market was further highlighted. The instant messaging products designed for vertical scenarios or needs of a minority of users, would still function as a tool to connect users, with the expansion of user scale and the improvement of service level as main goals. WeChat and QQ, the most popular instant messaging products, have been committed to linking users, content and services, thereby enabling the access to critical data flows in the mobile Internet era.

Generally speaking, the changes of instant messaging applications with the leading position in market mainly focused on three aspects in the first half of 2017: the position of providing access to critical data flows, the linkage capability of content and services and the maturity of business model.

First of all, the position of instant messaging to provide access to critical data flows on mobile Internet has been established. Related data showed that the penetration of instant messaging in netizens exceeded 90%, far ahead other mobile applications. In addition, through the survey on new Internet users in the past six months, we found that the penetration of instant messaging ranked first among all applications used by new netizens, reaching 80.8%, which was 16.9 percentage points higher than that of the second application of search engine. Internet users

accepted instant messaging much better than any other Internet applications. Therefore, it is expected that the leading position of instant messaging to provide access to data flows will be further enhanced.

Then, instant messaging products, represented by WeChat, focused on improving their capability of connecting services and content. Regarding service linkage, mini programs of WeChat were formally launched in January 2017, initially building a new ecology in distributing massive traffic to all kinds of other Internet services. In terms of content linkage, "Search" and "Top Stories", two new functions of WeChat launched in May, forwarded quality content to users by taking advantages of social networking on the instant messaging platform.

Finally, as the business model for instant messaging products became mature, the business revenue grew significantly. Through the provision of data flows for various value-added services, the problem of making profit from instant messaging products themselves was resolved and a thriving industrial ecology was formed. According to the financial statements in the first quarter of 2017, the revenue of Tencent's business with instant messaging services as the core increased by more than 40% on a year-on-year basis; thanks to the increasingly mature online live streaming, Momo's revenue grew by 421% in the first quarter of 2017 on a year-on-year basis.

1.2 Search Engine

Up to June 2017, China had 609 million search engine users, with a usage ratio of 81.1%; it also had 593 million mobile search users, with a usage ratio of 81.9%. The user number of search engine increased 7.07 million from the end of 2016 or increased by1.2 %; the user number of mobile search engine increased 17.6 million from the end of 2016 or increased by 3.1%,

The Number of Search/Mobile Search Users and Utilization Ratio Dec. 2016 - Jun. 2017

Source: CNNIC   Statistical Survey on Internet Development in China   2017.6
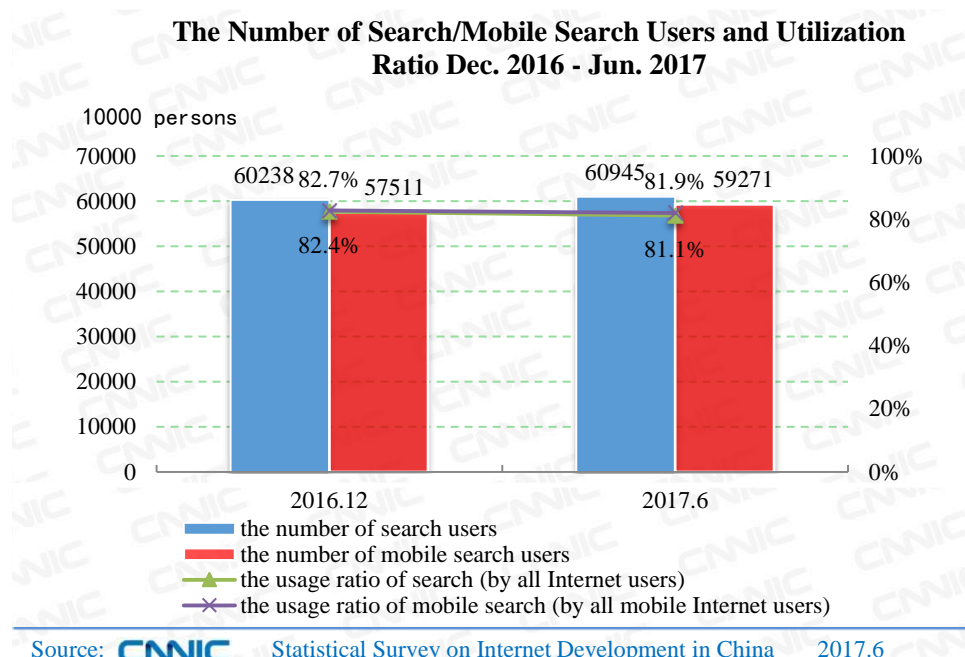
Figure 20 The Number of Search/Mobile Search Users and Utilization Ratio Dec. 2016 - Jun. 2017

In the first half of 2017, an increasing number of search engine applications were used at mobile ends. The user number of search engine applications at mobile ends increased more rapidly than that of all search engine applications. Regarding businesses, the contribution of mobile search to total data flows kept increasing and the revenue at mobile ends has become the pillar of the revenue growth of the industry. In the first quarter of 2017, according to Baidu's financial statements, the revenue at mobile ends accounted for 70% of the total revenue, higher than the figure of 60% in the same period of 2016; Sogou's financial reports showed that the data flows generated by mobile search grew by more than 50% on the year-on-year basis and the revenue of mobile search took up 72% of the total search revenue.

Artificial intelligence had become the core technology to promote the continuous improvement of search engine algorithms, but it was still difficult to measure the improvement of user experience. At the intelligent mobile hardware, search requests by means of voice and image increased rapidly and were overtaking those by text. In terms of fuzzy search and personalized recommendation, the matching algorithm combined with artificial intelligence enabled search engines to understand the content, provide search results based on fuzzy requests, or even offer more personalized recommendations based on the tags of user attributes, habits and interest. For instance, the stream model recommended by algorithm was replacing part of the active search

behaviors of users. However, since the algorithm based on artificial intelligence technologies still needs data to be accumulated for a certain period of time, no significant breakthroughs have been made to improve user experience, and more accurate and comprehensive search services represented by quick search results and knowledge graph have not yet reached users.

The search engine industry was faced with great pressure of competition, and the year-on-year growth of advertisement revenue and net profit has dropped. The innovative business model has become an important concern of the industry. Externally, the search engine industry was faced with strong peer competition. Vertical applications such as search made in the fields of online shopping, tourism, news and social networking developed rapidly. The business model for search engines and the innovative process of products and services lagged behind. Internally, incumbents of the industry were faced with competition brought by new entrants, and the emerging of WeChat search would have an impact on the existing pattern. The increase in user search flows was sluggish, as the PC-end search requests almost reached its saturation point, and the distribution effect of mobile-end search requests was more and more obvious. With enhanced practical technology being gradually applied, demands for online streaming services, native advertising and content marketing were even strong. Advertisers had more choices in advertising forms and higher bargaining power, which resulted in the reduced attractiveness of keyword search advertising.

1.3 Online News

As of June 2017, China had 625 million of online news readers, accounting for 83.1% of all netizens, with a semi-annual increase rate of 1.7%. Specifically, 596 million people or 82.4% of mobile Internet users read news on their phones, with a semi-annual increase of 4.4%.

User Scale and Utilization Ratio of Online News/Mobile News Dec. 2016 – Jun. 2017

Source: CNNIC Statistical Survey on Internet Development in China 2017.6
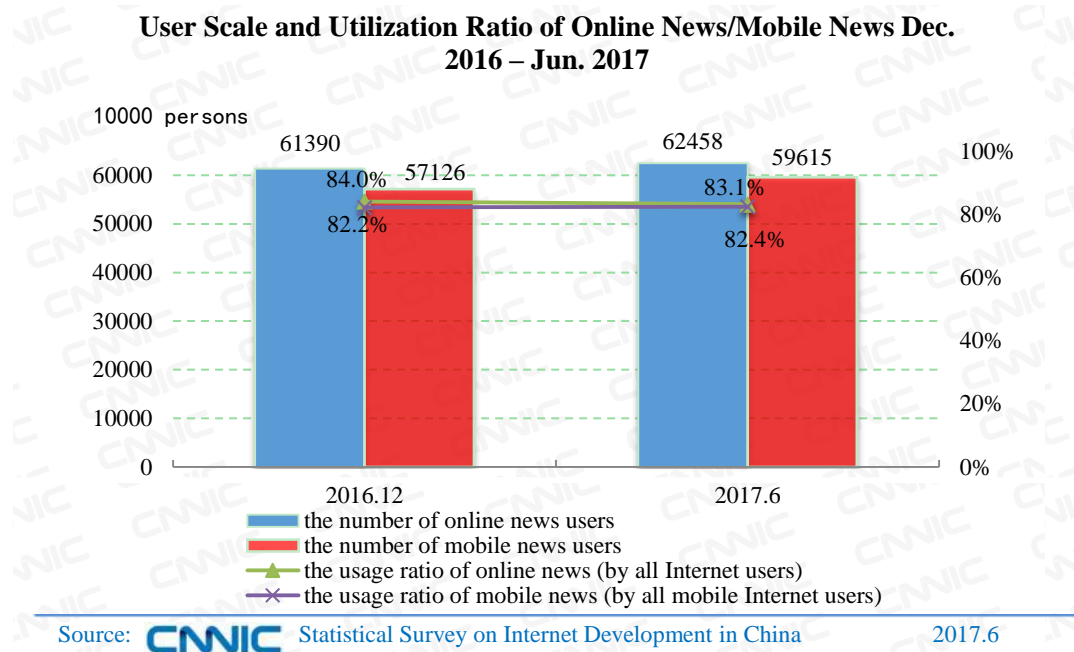
Figure 21 User Scale and Utilization Ratio of Online News/Mobile News Dec. 2016 – Jun. 2017

Online news is one of the earliest Internet applications in the history of China's Internet. As a basic application for information acquisition, online news service model has transformed from the independent distribution featured by collecting, editing and distribution in the early stage to the provision of information platforms focusing on information needs of users. Now three trends characterize the news and information sector.

First, the provision of information aggregation platforms further clarifies the division of labor. Compared with the previous news operation mode focusing on independent collecting, editing and distribution, the information aggregation platform has made great improvement in content form and scale. With this trend, the division of labor between online news producers and distribution platforms is clearer. In the past, content producers were made up of professional media, but they include both professional institutions and We-Media at present. Content aggregation platforms carry out product operation, information distribution and user retention with technology as the core.

Then, with overwhelming information, cross-border competition has become increasingly fierce. The information distribution mode based on platforms has brought in a large number of content providers, forming a competition pattern between professional media and We-Media. While new information types such as video and live streaming emerge in addition to the existing text and image, the service model is overlapped with those of video, microblog, live streaming

and other applications to some extent. Under such circumstances, there is not only competition between information aggregation platforms and professional news websites, but also penitential competition between information aggregation platforms and other applications.

Finally, technologies have become the core competitiveness of news and information platforms. The increase in content and users also challenges the content quality and delivery accuracy of information platforms. Therefore, technologies with artificial intelligence as the core has become the critical competitiveness of information service platforms. The future application of artificial intelligence technologies, such as big data, neural network, natural language understanding and automatic learning, will facilitate the further development of information aggregation platforms in information recommendation, marketing, deeper content creation and interactive communication.

1.4 Social Networking

Up to June 2017, the top three social networking applications were comprehensive ones. WeChat Moments and Qzone are social networking services derived from instant messaging. Their utilization ratio reached 84.3% and 65.8% respectively. Benefit from celebrities, Internet celebrities, the establishment and improvement of media content ecology as well as the in-depth deployment of short videos and mobile live streaming, the utilization ratio of Microblog as social media continued growing and reached 38.7%, up by 1.6 percentage points from December 2016. Among vertical social networking applications, Douban, a typical interests and social networking application, had a utilization rate of 8.6%.

The Usage Rate of Typical Social Networking Applications
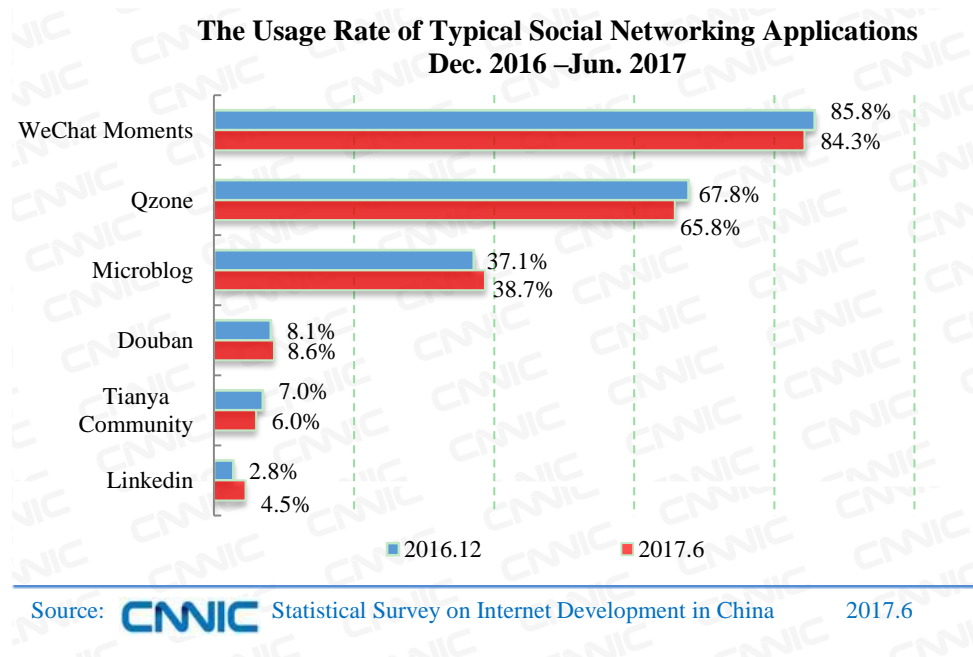**Dec. 2016 –Jun. 2017**

Figure 22 The Usage Rate of Typical Social Networking Applications Dec. 2016 –Jun. 2017

In the first half of 2017, internally, all kinds of social networking platforms focused on high-quality content production, and, externally, these platforms actively engaged in many industries.

Internally, the value of all social networking platforms was mainly reflected by content. These platforms served as a bridge connecting producers and users of quality content. Content producers not only included professional media, public relations agencies and big V (verified microblog users who have more than 500,000 followers), but also Internet celebrities, fans and general users. The continuous improvement of content quality has prompted more users to pay for services and stimulated the platform to further improve the payment model of quality content services. Meanwhile, social networking platforms have further promoted the user classification to provide diverse services for different users, improving the delivery accuracy of quality content and enhancing the user's willingness to pay membership fees.

Externally, the mobility of social networking platforms has enabled the industry to be engaged in other areas. From closely related subfields, such as Internet celebrity, live streaming and community, to advertising, games, e-commerce, finance and O2O, social networking platforms sought for greater development and commercialization opportunities on related industrial chains. Advertising was still the main commercialization mode adopted by social networking platforms. In the first half of 2017, WeChat Moments, microblog and other

comprehensive social networking platforms carried out well-targeted advertising and marketing in the form of image, text and video based on user attributes and interests.

II The Development of Business Transaction Related Applications

2.1 Online shopping

Up to June 2017, China had a total of 514 million online shoppers, a growth of 10.2% over the end of 2016. Among them, 480 million shoppers completed their deals via mobile phones, a half-year increase of 9.0%, and the utilization ratio rose from 63.4% to 66.4%.

The User Scale and Utilization Ratio of Online/Mobile Shopping Dec. 2016 – Jun. 2017

10000 persons

- the number of online shopping users
- the number of mobile shopping users
- the usage ratio of online shopping (by all Internet users)
- the usage ratio of mobile shopping (by all mobile Internet users)

Source: CNNIC Statistical Survey on Internet Development in China 2017.6
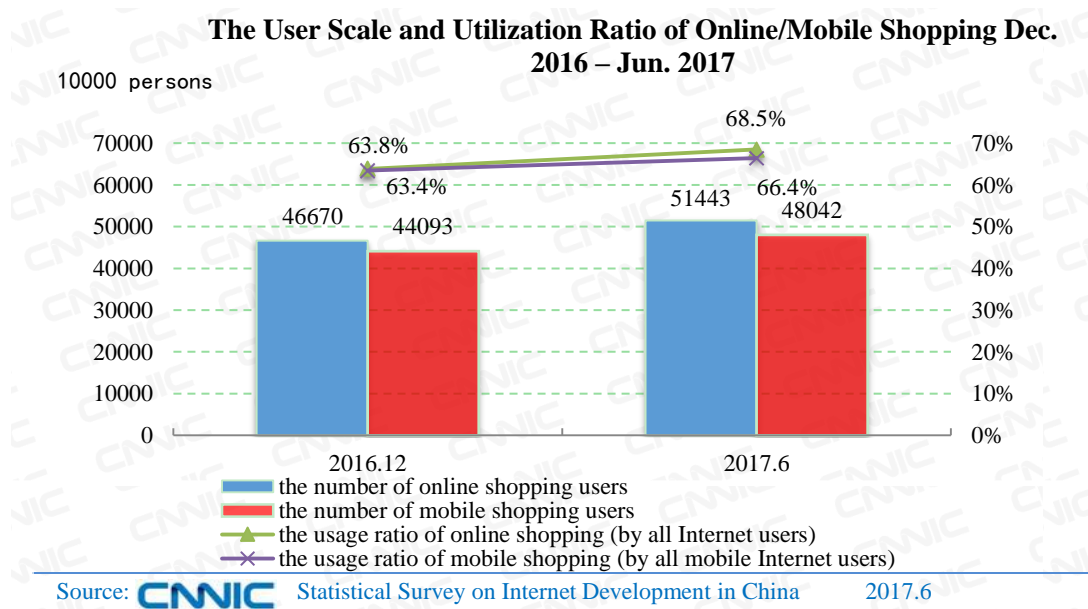
Figure 23 The User Scale and Utilization Ratio of Online/Mobile Shopping Dec. 2016 – Jun. 2017

The consumption upgrading of online shopping market was further highlighted. First, regarding the quality of consumer goods, users were willing to pay a premium for higher-quality goods, such as fresh organic food and global excellent goods; second, in terms of smart consumer goods, the consumption of smart refrigerators, somatosensory bicycles and other smart commodities grew by a wide margin when compared with that in last year; third, as for new consumer goods, the consumption of sweeping robots, dishwashers and other new products increased rapidly. Besides the factors such as the increased per capita income and young people

becoming the main online shopping group, the distribution and overseas expansion of e-commerce companies have driven the fast development of rural e-commerce and cross-border e-commerce. As a result, the potential of rural online shopping was unleashed and the demands of netizens for global excellent goods were stimulated, promoting the upgrading of consumption.

The online-offline integration was expanded in the aspects of data, technologies and scenarios. In the first half of 2017, e-commerce companies accelerated their investment in and cooperation with retail entities to realize the overall integration, connection and complementarity in the fields of data, supply chain, payment, logistics, physical stores, scenarios and products. In addition, the offline retail sector represented by convenience stores has become a hot market layout point, and a number of convenience store enterprises have gained a huge amount of financing. As the integration continues, new commercial activities featuring a blurred online-offline boundary, fragmented retail sector, and smarter consumption scenarios are taking shape.

As the competition of data resources is fierce, data security and data sharing challenge the development of enterprises and the government. The data interface conflict between Cainiao Logistics and S.F. Express and the cooperation between online platforms and offline businesses reflect that data has become important intangible assets and a controlling point for enterprises in the business competition of the Internet era. How enterprises obtain data, where lies the boundary and how to build an open, fair and secure mechanism for data sharing have become challenges faced by the government and enterprises.

2.2 Online Meal Ordering

Up to June 2017, 295 million Internet users had ordered meals online, a half-year increment of 86.78 million or 41.6% from the end of 2016. Specifically, 274 million of them did it via mobile phones, an increase of 41.4% from the end of 2016. The utilization ratio of mobile online meal ordering increased to 37.9%, up by 10 percentage points.

The User Scale and Utilization Ratio of Online/Mobile Meal Ordering Dec. 2016 – Jun. 2017

Source: CNNIC Statistical Survey on Internet Development in China 2017.6
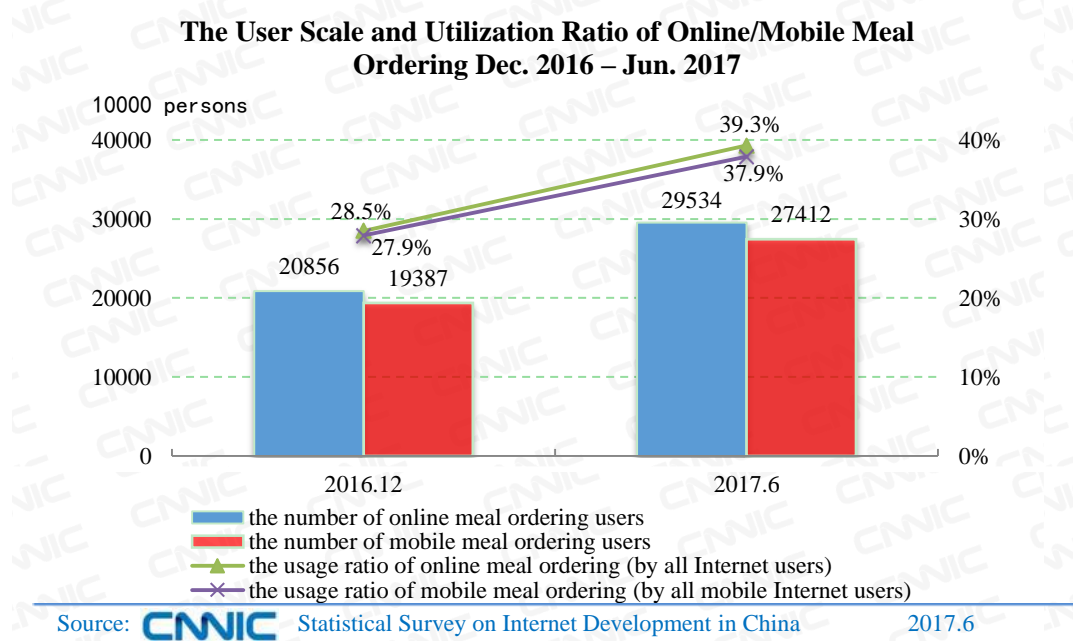
Figure 24 The User Scale and Utilization Ratio of Online/Mobile Meal Ordering Dec. 2016 – Jun. 2017

As the industry develops mature and its profitability is relatively low, it is inevitable for online meal ordering platforms to foster their existing business and expand horizontally. In terms of the business operation, all platforms still provide a huge amount of subsidies to increase market penetration while continuing to promote the refined operation to enhance user experience, such as offering food safety insurance services and upgrading logistics and coordination by using the technology of artificial intelligence. As for business development, the transition process of online meal ordering companies into integrated life service platforms is accelerated and these companies begin to use the logistics system of meal ordering to offer various delivery services, such as the delivery of daily necessities, flower, cake and medicine, errands and other life services.

Food safety and traffic safety are still two major development problems for the online meal ordering industry. With regard to food safety, in the first half of 2017 a number of platforms were criticized by China Food and Drug Administration due to operating without licenses or beyond the business scope, and some shops and restaurants were removed from the online platforms. With respect to traffic safety, because the platforms mainly operate in a crowdsourcing model and the distribution system lacks unified standards and management, deliverymen sometimes overspeed, drive into the motor vehicle lane, or even run the red light. These platforms aggressively expand their business in spite of their own operation and maintenance capabilities

and overemphasize the KPI, resulting in the problems of food and traffic safety.

2.3 Travel booking

As of June 2017, the number of netizens with the experience of booking air tickets, hotel rooms, train tickets or holiday travel products on the Internet reached 334 million, an increase of 34.41 million or 11.5% over the end of 2016. The Internet users who had ever booked train tickets, air tickets, hotel rooms and holiday travel products online accounted for 37.6%, 19.1%, 20.5% and 9.3% of all netizens respectively. Specifically, the number of netizens having booked air tickets, hotel rooms, train tickets and holiday travel products via mobile phone reached 299 million, an increase of 37.17 million or 14.2% over the end of 2016. The utilization ratio of mobile travel booking among Chinese netizens increased from 37.7% to 41.3%. In particular, the utilization ratio of hotel booking via mobile phone grew significantly.
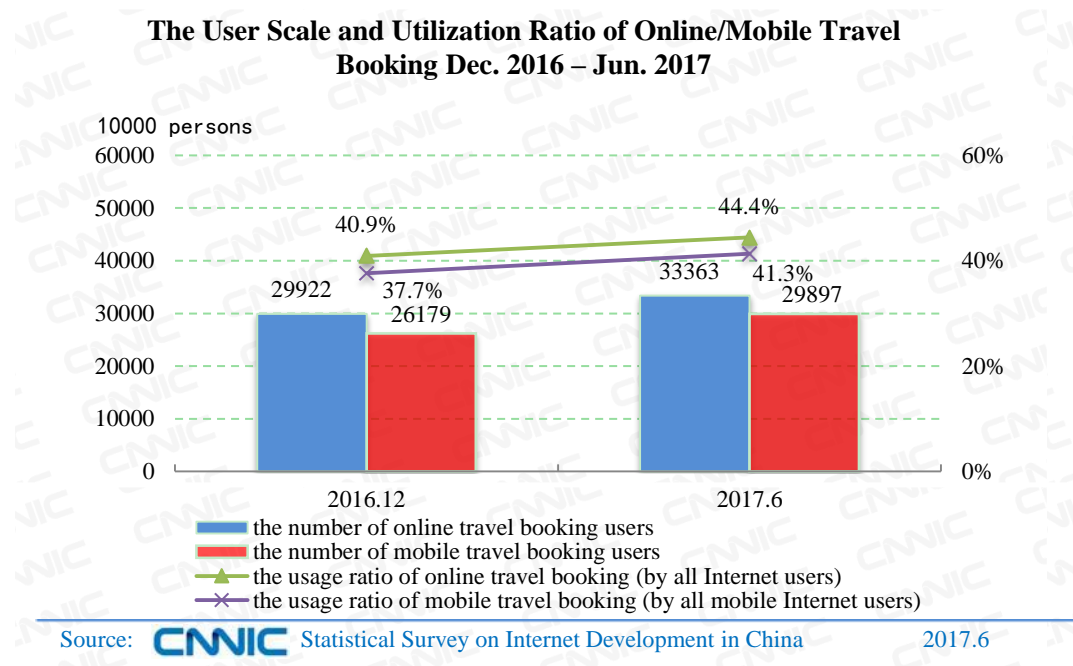
Figure 25 The User Scale and Utilization Ratio of Online/Mobile Travel Booking Dec. 2016 – Jun. 2017

The upgrading of national consumption stimulates more potential demands, while travel booking businesses compete in the market to gain more profits.

In terms of online air ticket booking, more efforts have been made to "enhance direct selling

and reduce agent distribution", and the air ticket booking of OTA[5] platforms operates as access point of data flow. Since domestic airline companies began the task of "increasing direct selling to 50%" delegated by the State-owned Assets Supervision and Administration Commission of the State Council, the revenue of air ticket booking via OTA platforms has gradually included "zero commission", with profit margins constantly squeezed. Compared with airline companies, by providing one-stop services OTA platforms can enrich consumers' choices of airlines and flights and offer complementary services such as airport pickup and hotel booking. With the increasingly important role of access point of data flow, the air ticket booking service is still an indispensable strategic business of OTA platforms.

In the field of hotel booking, companies need to expand the international hotel business and penetrate into the second- and third-tier cities to enhance profitability. China has become the world's largest outbound tourist country and the fourth largest inbound tourism country. OTA platforms purchase and invest in overseas travel companies, or conduct direct cooperation with overseas hotels, speeding up the layout of their global hotel business. Meanwhile, DIY tour mode springs up among domestic tourists, the tourism in nearby areas during short holidays develops rapidly, and demands in hotel reservations in the second- and third-tier cities grow. From the most profitable regions to the second- and third-tier cities OTA platforms explore the potential market of hotel booking by laying out more business channels and services in the second- and third-tier cities.

In terms of the booking of holiday travel products, OTA platforms promote the online-offline integration, with customized tours as their key business. Because the costs of attracting customers online become higher with the disappearance of flow bonus and residents living in the second- and third-tier cities still prefer doing shopping in physical stores, OTA platforms frequently purchase physical travel agencies to lay out physical stores in order to tap new tourist sources. In addition, as in the context of consumption upgrade the demands for customized tours increase substantially, the domestic market that is in an incubating stage evolves into one with a dual pattern. On the one hand, entrepreneurial businesses under the pressure of resource integration and flow acquisition resort to company customers for survival; on the other hand, large OTA

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[5]OTA: Online Travel Agent.

platforms develop new holiday travel products and compete in the customized tour market. In the meantime, small online tourism companies explore consumption potentials of users based on social networking tools and enter the "last mile" market of the destination places by taking advantages of bus tours.

III The Development of Internet Finance Applications

3.1 Internet Financing

Up to June 2017, 126 million netizens had purchased Internet financing products, an increase of 27.24 million over the end of 2016, and the utilization ratio had increased from 13.5% to 16.8%.
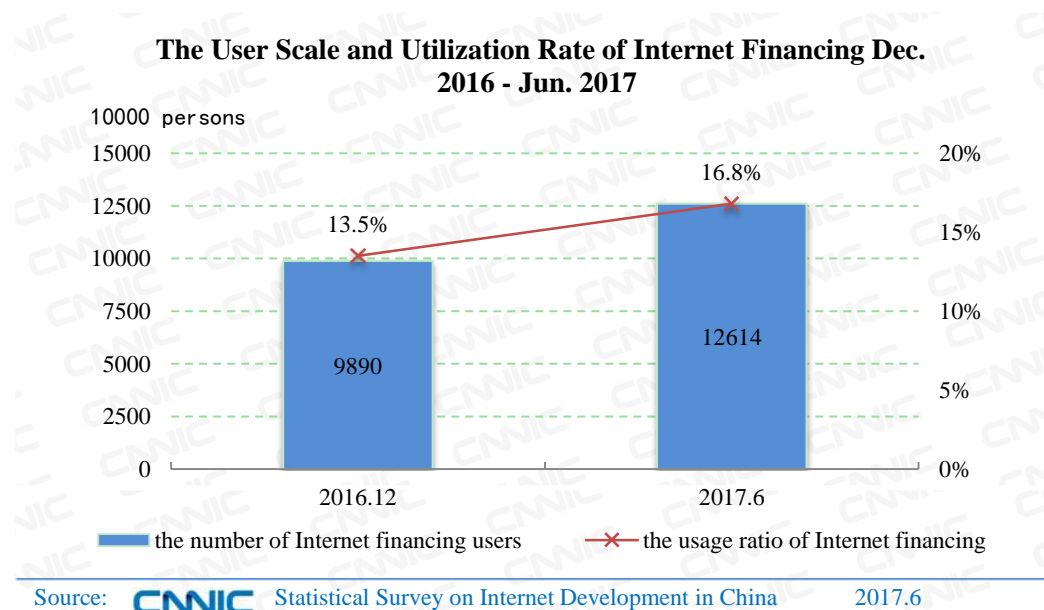
Figure 26 The User Scale and Utilization Rate of Internet Financing Dec. 2016 - Jun. 2017

The online advantages and offline advantages in the aspects of traffic, technology and financial products and services have been integrated in the Internet financing field. The confrontation and competition between online financing and offline financing has transformed to win-win cooperation. In the first half of 2017, the integration of channel and technology initially emerged, The financing platform started to introduce traditional financial institutions such as funds companies and banks, open distribution channels for monetary funds and offer artificial intelligence technology services. New changes in the market would further promote the

development of the Internet financial industry. In the aspect of channel integration, access to Internet platform with abundant data inflows enriched online financing products and facilitated users purchasing products from traditional financial institutions. Regarding technology integration, open data and technology on the platforms enhanced the matching efficiency of products and services of financial institutions with user demand and accelerated the innovation of financing products and models, meeting the diversified financing needs of users.

The yield rate of Internet financing products continued to decline, and the industry became more standardized. In the first half of 2017, impacted by the liquidity tightening, the yield rate of Internet monetary funds and Internet financing products from banks grew by a large margin, generally reaching more than 4%. On the contrary, the yield of peer-to-peer Internet lending products showed a downward trend. The change was resulted from the increased costs of operation and customer acquisition of Internet lending platforms and, more importantly, from stricter and more standardized regulatory policies of the industry. Since the *Implementation Plan for the Specific Rectification Work of Internet Financial Risks* was released by the State Council in 2016, some lending platforms have completed the rectification according to regulatory rules in the first half of 2017 and some inferior platforms with high yields and high risks have withdrawn from the market, enabling the yield rate of the industry to return to a more reasonable level. In June, the rectification duration was announced to be extended for another year. The Internet lending industry will be further standardized in the transformation to be explored in 2017,.

3.2 Online Payment

Up to June 2017, China had a total of 511 million online payment users, a half-year increase of 36.54 million or 7.7% over the end of 2016, and the utilization ratio increased from 64.9% to 68.0%. Specifically, China had 502 million mobile payment users, a semi-annual growth of 7.0%, and the utilization ratio increased from 67.5% to 69.4%.

The User Size and Utilization Ratio of Online/Mobile Payment Dec. 2016 - Jun. 2017
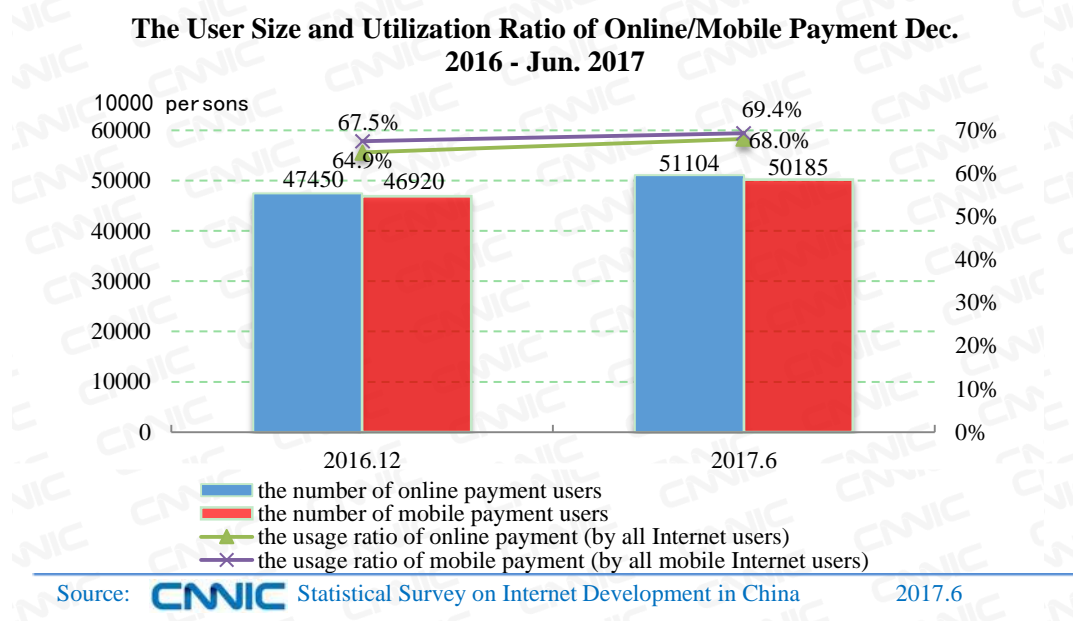

Figure 27 The User Size and Utilization Ratio of Online/Mobile Payment Dec. 2016 - Jun. 2017

The offline payment remained a hot market issue, and netizens further developed the habit of using mobile payment apps to pay bills when shopping at physical stores such as supermarkets and convenience stores. According to the survey, 61.6% of netizens pay offline bills through mobile payment. Among them, 35.1% say they use mobile phones to make payments in most cases while 31.8% say they use cash or bank cards most of the time. In first-tier cities, however, as many as 40.9% of offline consumers use mobile phones to make payments online in most cases.

Offline Payment Modes of Mobile User
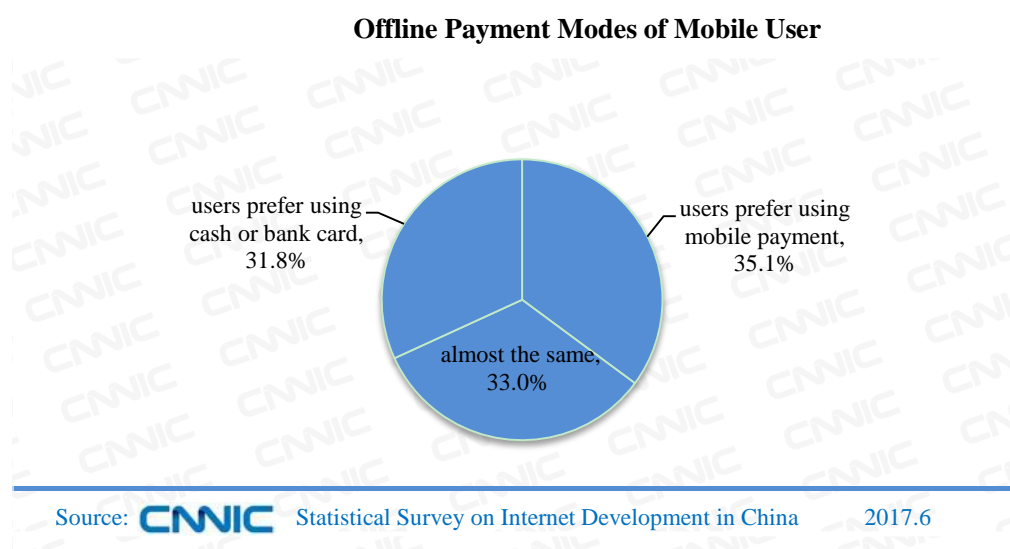
Figure 28 Offline Payment Modes of Mobile User

While exploiting the domestic market, China's online payment companies also develops the overseas market. On the one hand, China's payment enterprises cooperate with local businesses and exploit overseas travel payment scenarios to meet the overseas payment demand of domestic outbound tourists, gradually expanding the payment models to the local consumers. On the other hand, through merger and acquisition, capital injection, and strategic cooperation, China's payment enterprises seize overseas markets quickly and accelerate their globalization. Chinese online payment applications are rapidly reaching Internet users in different regions of the world, and the expansion of the overseas market will also bring development space and strong international competitiveness for China's payment enterprises.

IV The Development of Online Entertainment Applications

4.1 Online Games

Up to June 2017, the number of online game players reached 422 million, an increase of 4.6 million over the end of 2016, accounting for 56.1% of all netizens. In particular, the number of mobile online game users reached 385 million, an increase of 33.8 million from the end of 2016, accounting for 53.3% of mobile Internet users.
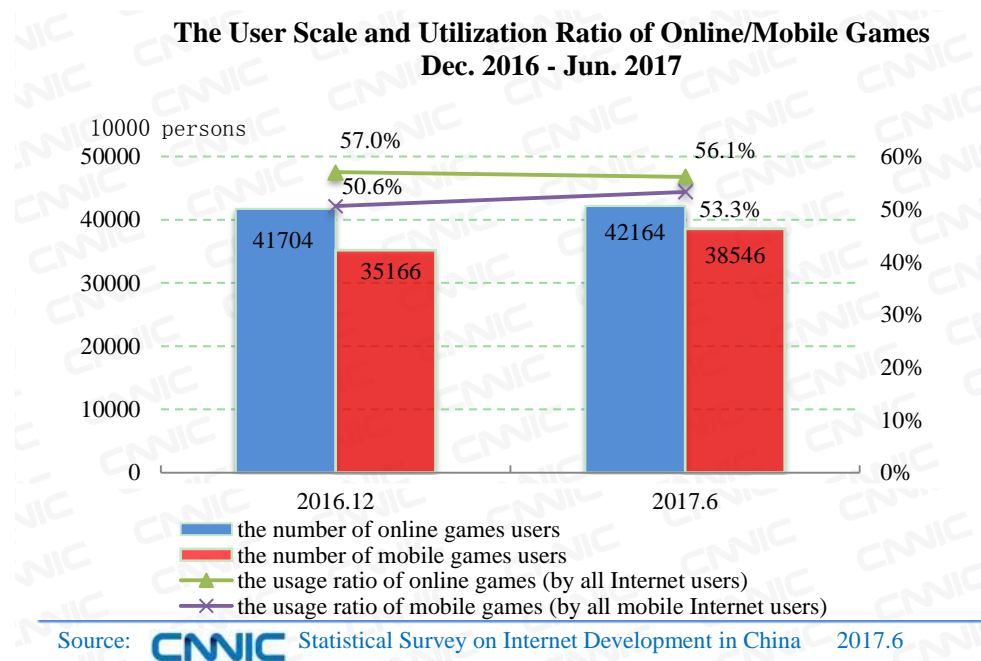

Figure 29The User Scale and Utilization Ratio of Online/Mobile Games Dec. 2016 - Jun. 2017

In the first half of 2017, China's online game industry kept developing, with its revenue growing significantly. The game industry is increasingly linked with other sectors on the IP industry chain. Seen from the development of games, competition and social contact are the core elements for heavy games to keep generating extremely high revenue. As game user groups are continually divided into vertical subgroups, stand-alone games serving a niche market are expected to become a new growth point of the industry.

Viewed from the industry development, the increased revenue and the deeper industry linkage were the two major development features of the online game industry in the first half of 2017. In terms of the industrial revenue, the revenue of the online game market driven by mobile games still grew at a fast pace. According to related financial statements, Tencent and NetEase are the top two of China's game companies, and their game revenue grew respectively by 34% and 78.5% in the first quarter of 2017 on the year-on-year basis. As for the industry linkage, the increasingly close cooperation between online game makers and literature and movie companies has resulted in a strong industrial chain from upstream IP production to downstream IP commercialization. Ali Games, Wanda Cinemas and Linekong Interactive and other game makers successively announced their IP-adapted game plans in the first half of 2017, and promoted the marketing of films and television programs by cooperating with Youku, Iqiyi and other video websites.

Seen from the game types, competition feature is still one of the core elements boosting the revenue growth of online games, and the market potential of PC stand-alone games distributed via online channels begins to appear. Competitive games played in PCs and mobile phones in the first half of 2017 maintained strong revenue capacity, and the peripheral industry ecology derived from them such as games and activities showed prosperity, promoting e-commerce enterprises in other fields such as Alibaba, Suning and JD to enter into this field. In addition, although PC-end stand-alone games have become a vertical niche market of the games industry, the payment capacity of domestic users and the improvement of the copyright environment prompt it to gradually show strong development potentials. Related data shows that steam, an overseas stand-alone games distribution platform, owned more than 15 million Chinese users in the first quarter of 2017, with a quarter-on-quarter growth rate at 57%. Such a vast market space attracts domestic game makers represented by Tencent to set foot in this field.

4.2 Online Literature

Up to June 2017, the user scale of online literature was 353 million, accounting for 46.9% of the total netizens and representing a half-year increment of 19.36 million. In particular, users of mobile online literature reached 327 million, constituting 45.1% of total mobile netizens and recording a half-year increase of 22.91 million.
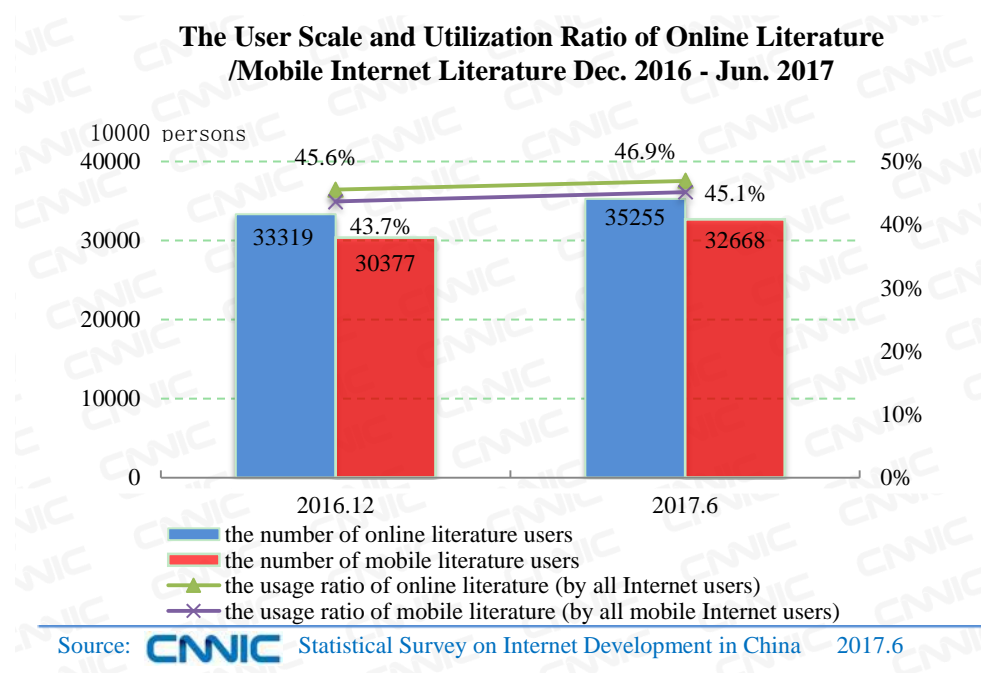

Figure 30 The User Scale and Utilization Ratio of Online Literature /Mobile Internet Literature Dec. 2016 - Jun. 2017

In the first half of 2017, the online literature industry showed two major development features: more ecological and internationalized. As the oligopoly of the industry intensifies, large online culture & entertainment groups with abundant capital and copyright resources have continued to promote the ecological construction of online literature with IP as its core. In the meantime, China's online literature works have started to be favored by overseas readers. Online literature works published abroad will become the next development focus of the industry.

Regarding the ecological construction, the production and adaptation of literature works base on IP have been continuously promoted as the key of the industry development, and royalties are expected to be critical for the revenue growth of the industry. Related data shows that the proportion of royalties to the total revenue in the online literature industry in 2016 nearly doubled that in 2015, indicating that royalties from the future online literature will gradually hold a more

important position in the revenue of the industry. To this end, Ali Literature has cooperated with Youku and Alibaba Pictures; Yuewen Group with Wanda Pictures and Tencent Games. They respectively set up special funds to encourage online literature authors to produce premium content and provided resources from their other business to pave the way for the commercialization of online IP works.

In terms of the international development, overseas readers have been increasingly interested in online Chinese literature, which makes it possible for online literature companies to expand their overseas business as a new development direction. There are two main reasons for overseas readers being keenly interested in China's online literature works. First, China's online literature works operate as a low-cost channel for overseas readers to know about China, and gradually become one of China's cultural export modes; secondly, the domestic online literature industry has experienced a long-term fierce competition, and with great industrial maturity the quantity and quality of works have been improved significantly. Driven by these factors, websites designed to translate Chinese novels for overseas readers are thriving. Qidian International under Yuewen Group announced that it would be officially put online in May, initiating its overseas layout.

4.3 Online Video

As of Jun 2017, China's online video user scale reached 565 million, increased 20.26 million or 3.7% over the end of 2016; the utilization ratio was 75.2%, up by 0.7 percentage points over the end of 2016. In particular, mobile video users numbered nearly 525 million, an increase of 25.36 million or 5.1% over the end of 2016, and the utilization ratio was 72.6%, up 0.7 percentage points.
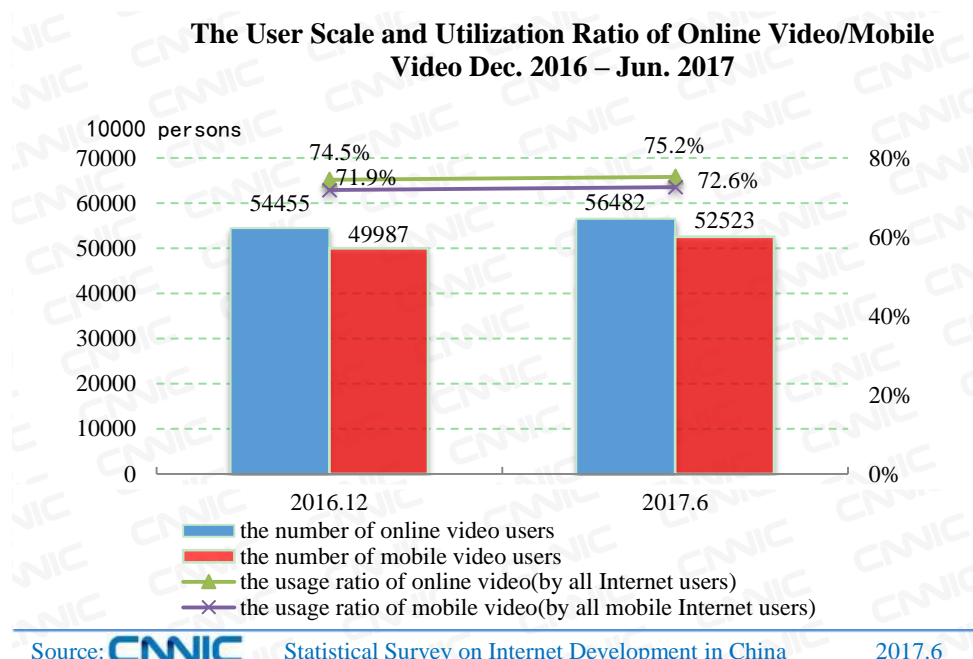
The User Scale and Utilization Ratio of Online Video/Mobile Video Dec. 2016 – Jun. 2017

Figure 31The User Scale and Utilization Ratio of Online Video/Mobile Video Dec. 2016 – Jun. 2017

In the first half of 2017, the online video industry continued developing in the competitive background. Major video websites did their best to lay out the new ecology of pan-entertainment content including literature, comics, film and television, and games and their derivative products. The overall coordination capability of ecological platforms was gradually highlighted.

As for policies, relevant state departments have strengthened the review and supervision of online videos, further promoting the standardized development of the industry. Live programs, news and information services, and professional generated content were supervised and administrated in 2016. Then, the *Notice on Further Strengthening the Administration of the Creation and Broadcasting of Audiovisual Programs via the Internet* released by the State Administration of Press, Publication, Radio, Film, and Television in June 2017 emphasized that online audiovisual programs need to be measured on the same basis as for radio and television programs. Policy control is conducive to the improvement of the content quality of the industry, greatly affecting the content layout of all video platforms.

In terms of content, the development of video content with copyright tends to be stable, the production of original content develops rapidly, and short video content receives public attention once again. In 2017, major video websites still spent lots of money purchasing dramas and variety shows with copyright in order to guarantee the Internet traffic. They also increased their

investments in original dramas and variety shows. As a result, the new normal of online dramas and variety shows is featured by large cast, huge capital and big-budget production. Film and television drama enterprises under large video platforms also accelerate their upstream planning and explore the whole industrial chain of video IP, providing content for video websites. Moreover, major video websites categorize short videos as an important part of the ecological entertainment model, and make full use of the long tail effect of video content.

Regarding the business model, with the breakthroughs in the forms of video advertising and the rapid development of user-to-pay and derivative products, revenue models of video websites are diversified. In recent years, the marketing potential of online video content has been tapped continuously. In addition to in-drama advertisement, other creative advertising techniques such as outside-drama original paste and "grafting & transplanting" have been welcomed by advertisers. In the meantime, as the payment habit of video users develops and the user payment market grows rapidly, other business revenue models based on the IP of films and television dramas, such as the revenue generated from games and derivative products, also increase, promoting the benign profit cycle of the industry. In addition, the flourishing of live broadcast channels/products and short videos on video websites will also promote the development of value-added service modes.

4.4 Online Music

Up to June 2017, the number of online music listeners reached 524 million, an increase of 21.01 million over the end of 2016, accounting for 69.8% of all Internet users. In particular, the number of mobile music listeners reached 489 million, a half-year increase of 21.38 million, accounting for 67.6% of mobile Internet users.

The User Scale and Utilization Ratio of Online Music/Mobile Music Dec. 2016 - Jun. 2017
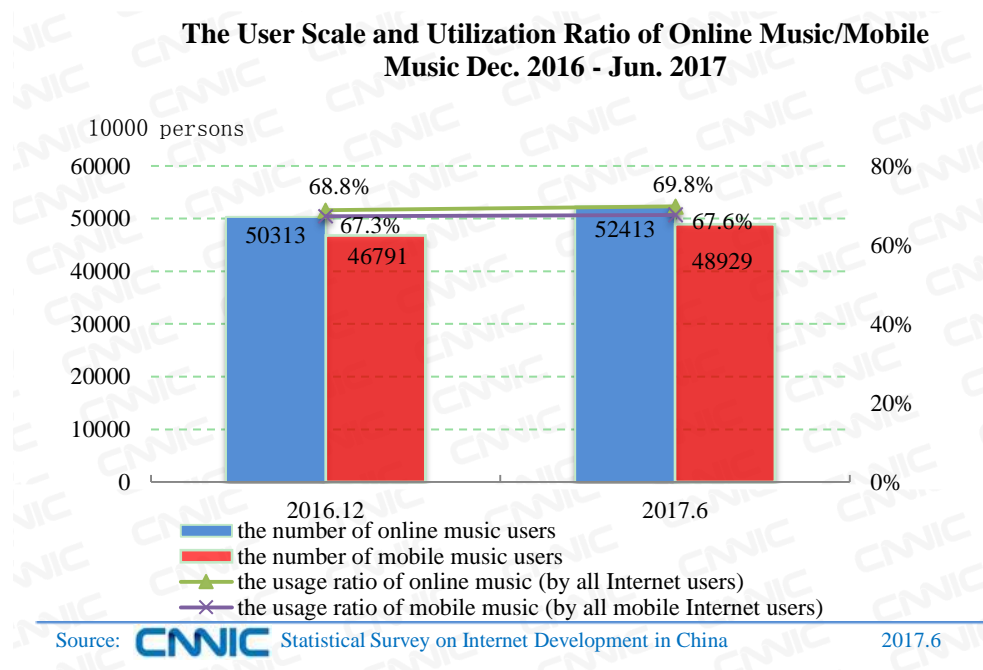

Figure 32 The User Scale and Utilization Ratio of Online Music/Mobile Music Dec. 2016 - Jun. 2017

The integration of group resources and the improvement of copyright layout marked the main development trends of China's online music market in the first half of 2017.

The continual integration of internal resources is still the top priority for major online music groups. After a series of mergers and acquisitions, China's online music market has taken on an obvious oligopoly trend. Tencent, Ali and other music groups have acquired a large amount of brand and product resources through mergers and acquisitions, and the challenge facing them now is how to effectively integrate these resources and make differences among the products. In the first half of 2017, the three music brands, such as QQ, Kuwo and KuGou, were officially merged into Tencent Music Entertainment Group; Ali Music purchased damai.cn, an offline concert ticketing platform, trying to create an O2O model of "online music plus offline concert ticketing"; NetEase Cloud Music announced to be split into independent companies, and completed the series A round financing.

When integrating resources, online music companies are also promoting their copyright layout. As the domestic environment for online music copyright keeps improving, piracy behaviors have been cracked down over the past two years and infringements of intellectual property rights in the industry have decreased markedly. Thus, the importance of copyright resources to online music firms has been increasingly enhanced. In this context, differentiated

copyright resources have gradually become the core competitiveness of major online music platforms, which attracts all online music companies to invest in the music copyright market. In the first half of 2017, Xiaomi and Tencent successively reached an agreement on the copyright cooperation with the three major international record companies, such as Warner, Universal and Sony. NetEase Cloud Music in the latest round of financing also said that new funds would be invested in the development of the copyright system.

4.5 Live Streaming

Seen from content categories of live streaming[6], the utilization ratio of live game streaming and host live show has increased markedly. Up to June 2017, China had 343 million live streaming users who accounted for 45.6% of all netizens. In particular, the user scale of live game streaming was 180 million, accounting for 23.9% of the total netizen scale and representing a semi-annual increment of 33.86 million. The users of host live show reached 173 million, constituting 23.1% of all netizens and recording a half-year increase of 28.51 million.
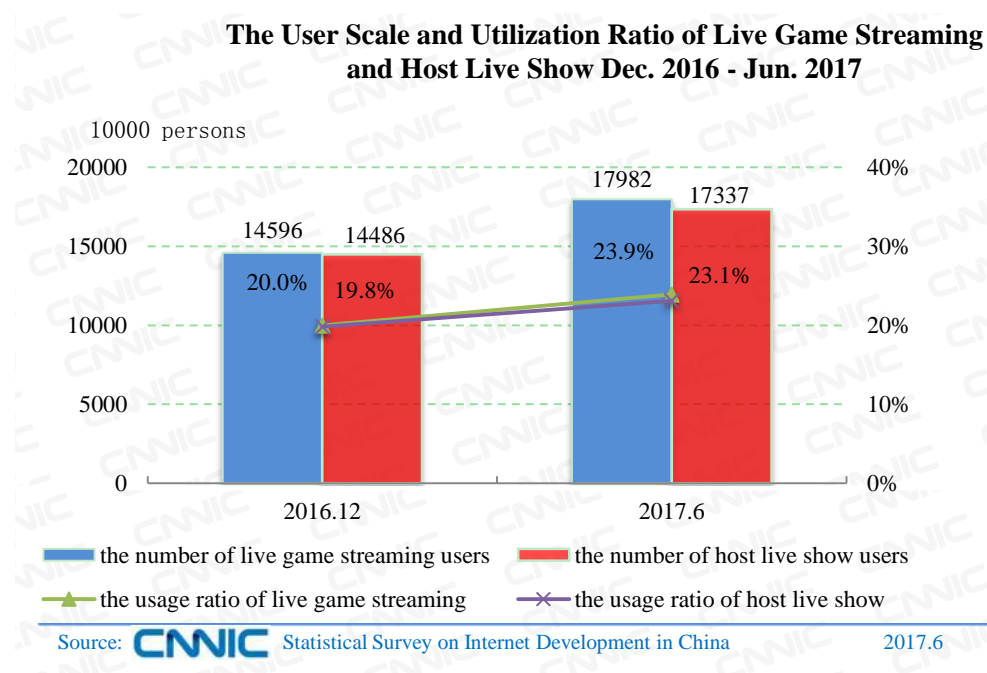

Figure 33 The User Scale and Utilization Ratio of Live Game Streaming and Host Live Show Dec. 2016 - Jun. 2017

As a number of large live streaming platforms completed their financing with huge amounts

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[6] Live streaming services surveyed for this report include live sport broadcasting, host live show, live game streaming, and live concert streaming.

of money in the first half of 2017, live streaming services featuring host live show and live game streaming have maintained a booming tendency. In the aspect of industrial development, the standardized operation and quality content are the two main development directions.

The standardized operation of live game streaming and host live show was promoted vigorously in the first half of 2017. After the *Administrative Provisions on Internet Live-streaming Services* was released at the end of 2016, law-enforcement campaigns against vulgar content on live streaming platforms were launched in the first half of 2017. In January, the Ministry of Culture held a briefing with online performance businesses, requiring that all live streaming platforms to conduct comprehensive self-examination and self-cleaning for illegal content, carry out law-enforcement inspections by means of randomly selecting inspectors and entities and releasing inspection results, and crack down illegal content such as "vulgar productions and kitsch". In April, Cyberspace Administration in Beijing and other relevant departments interviewed with Top News, Volcano Live and Pepper Live, investigated the pornographic content provided by these websites in accordance with the law, and ordered them to make rectification within a definite time. After several rounds of crackdowns, vulgar live streaming content has basically disappeared, with a clean live streaming space gradually taking shape.

Live streaming platforms put superior resources mainly into the production of PGC (Professional Generated Content), making the optimization of live streaming content an inevitable trend of future development. The live streaming industry in the process of rapid development has gradually improved its professional level, marking a difference from the development in 2016. Live streaming platforms increase resource inputs into the PGC creation. As a result, the non-professional UGC (User Generated Content) can hardly compete with the PGC. Program features, media resources, and operational capabilities will be the three core competitive advantages of live streaming platforms in the future. Tencent's NOW Live and YY's Huya launched ecological support plans to motivate original content producers in the first half of 2017, and has set up special funds and invested media resources to support various links of live streaming such as content creation, exposure and operation.

V The Development of Public Service Applications

5.1 Online Education

Up to June 2017, China had 144 million online education users, an increase of 6.62 million or 4.8% over the end of 2016, and the utilization rate stayed at 19.2%, up by 0.4 percentage points over the end of 2016. In particular, mobile online education users numbered 120 million, a semi-annual increase of 21.92 million or 22.4%, and the utilization ratio was 16.6%, up 2.5 percentage points from the end of 2016.

The User Scale and Utilization Ratio of Online/Mobile Education Dec. 2016 – Jun. 2017

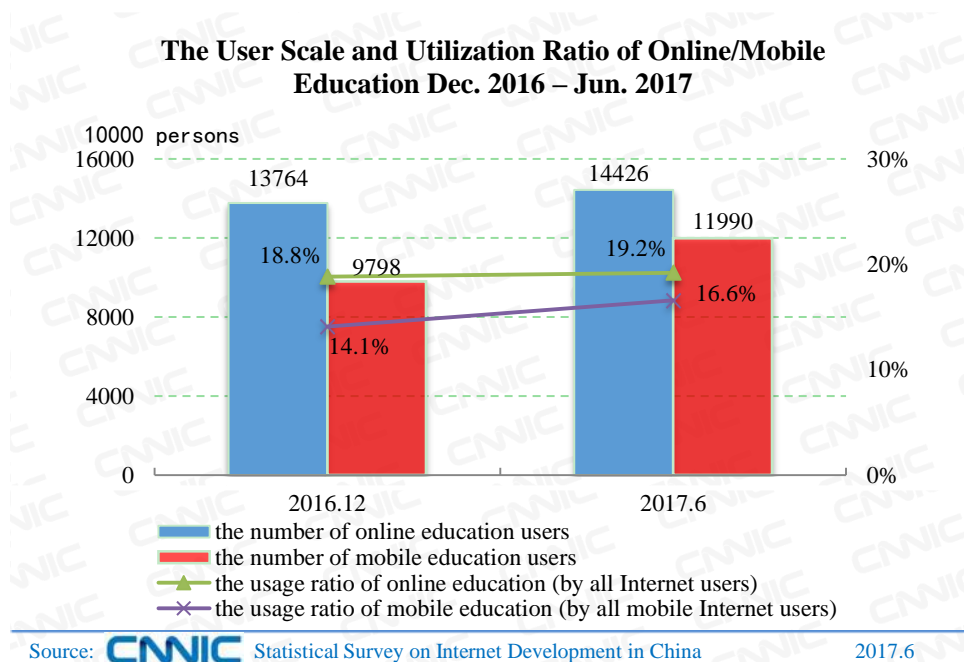Source: CNNIC Statistical Survey on Internet Development in China 2017.6

Figure 34 The User Scale and Utilization Ratio of Online/Mobile Education Dec. 2016 – Jun. 2017

The online education market for children English sees fast growth. Since 2016, online brand English training agencies represented by VIPKID, DaDaABC and 51Talk young English have quickly captured the market, and traditional offline agencies such as New Oriental and Xueersi have launched their development plans, leading to a fierce competition in the online training market for children English. The first- and second-tier cities have become leading consumption regions for online children English education because of their higher economic level, advanced education concepts of parents and sophisticated Internet technologies, while there is still huge development space for the third- and fourth-tier cities in the future.

The upgrading of online education industry is driven by artificial intelligence technologies. In 2017, artificial intelligence education products came out one after another. From the "Uni

intelligent learning system" of hujiang.com, to the "college entrance examination robot" of Master Learner and the "AI English teacher" of Fluent English, artificial intelligence technologies began to enter the market and affect online education. Now, scenarios of artificial intelligence technologies in the field of education mainly include oral test and intelligent marking, adaptive learning, virtual learning assistant and expert system, covering the whole industry chain of "teaching, learning, examination, assessment and management". Some online education platforms enhance their service effects through the introduction of artificial intelligence technologies and attract users to pay by combining technology channels with live courses. Other technology-oriented enterprises cooperate with institutional schools by adopting the form of technical output and apply artificial intelligence to oral test, intelligent marking and other scenarios, with promising business prospects.

5.2 Online Car-hailing Services

Up to June 2017, 278 million Internet users had hailed a car online, a half-year increment of 53.29 million or 23.7%. China had 217 million online tailored taxi or fast ride users, a semi-annual increase of 29.4%, and the utilization ratio increased from 23% to 28.9%.
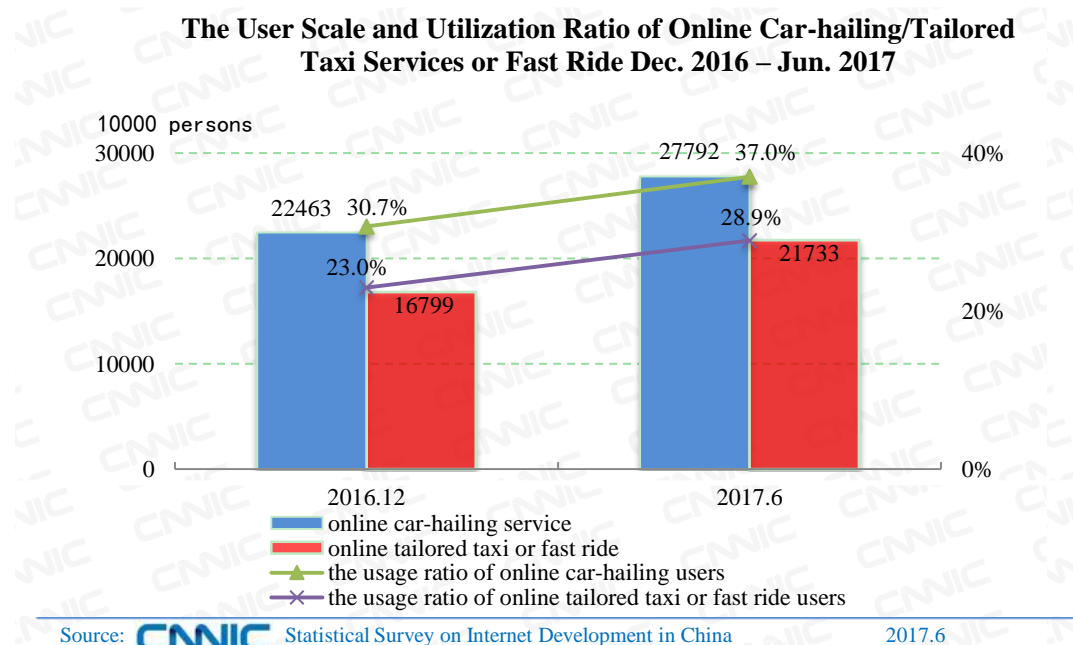

Figure 35 The User Scale and Utilization Ratio of Online Car-hailing/Tailored Taxi Services or Fast Ride Dec. 2016 – Jun. 2017

The online car-hailing market experienced the stage of rapid capital-driven expansion, and

has returned to the path of overall standardized development.

New policies for online car-hailing services have disenchanted the market by setting the development course for the industry. Local implementation rules have adjusted the threshold for the market entrance based on the development of a city. Based on the ecological development of cities *the Interim Administrative Measures for the Business of Online Taxi Booking Services* was put into effect in November 2016 to properly regulate operation and service standards of online car-hailing, resolve the unfair competition problem produced by the rapid development of online car-hailing services and promote the further standardization, coordination and orderly development of the industry. Afterward, 42 cities in China including Beijing, Tianjin, Shanghai, Chongqing and Hangzhou introduced suitable implementation rules on the management of online car-hailing services according to their own development. The requirements of first-tier cities for local household registration and license plate facilitate the prevention and control of "city diseases". Small- and medium-sized cities do not impose restrictions on household registration and relax the performance requirement for vehicles, promoting the diversified employment to a certain extent.

Various online car-hailing businesses need to seek new development space in response to regulatory policies. Since the implementation of new policies for online car-hailing services in the past six months, companies have actively explored new ways to boosting profits. Shou Qi Group has transformed its operation model of cruising taxis into that of online car-hailing services and established an open platform for franchised outlets. Focusing on automobile services Ucar has built four operating systems for car rental, tailored taxi, auto finance and auto e-commerce to support the future development. DiDi has adjusted its price strategy, devised diversified business structures, and expanded carpooling, car rental services and overseas market operation. Confronted with fierce competition of online car-hailing services, traditional cruising taxis services need to be upgraded to adapt to the Internet. DiDi as an Internet software service platform has get involved in this transformation and still has great development potential in the efficiency improvement driven by network technologies.

5.3 Shared Bike

Since the second half of 2016, shared bike services vigorously driven by capitals have realized the fast development, some shared bike start-ups have kept emerging, and the first brand of this industry has completed several rounds of financing in less than a year. As of June 2017, the number of shared bike users reached 106 million, accounting for 14.1% of the total Internet users, and the business has penetrated from the first- and second-tier cities to third- and fourth-tier cities. Shared bike brands with strong financing capabilities have started to set foot in the overseas market.

The booming development of shared bike benefits from the following three factors. First, the popularity of mobile Internet devices and the improvement of mobile network environment have laid a foundation for the business of shared bike; second, the public transport network for the first- and second-tier cities have been increasingly improved, but it cannot cover the "last mile" for the trip of a user; third, China's favorable financing environment has become the catalyst for the rapid development of shared bike, enabling shared bikes to be used a wide range of area in a very short period of time. For the first-tier cities facing intense traffic pressure, the trip model of the "public transport plus shared bike" provides simple, economical and efficient solutions for citizens, reflecting that offline Internet services can benefit citizens' livelihood. Although shared bike services flourish, the problems brought by shared bikes, such as municipal administration, deposit supervision and service operation, have attracted the attention of the society.

Two trends such as market restructuring and technological innovation will characterize the future development of the shared bike industry. As for the market, the industry restructuring has initially taken shape. Although a large number of shared bike start-ups have come into being, their technological level and management capability are relatively low, so they can hardly compete with leading companies with position advantages and avoid the oligopoly trend. As for the technology, the capability of technological innovation will be at the core of differentiated competition for the industry. The challenges created by shared bikes, such as municipal administration and deposit supervision, should not be neglected. The innovative integration of new technologies into shared bikes, such as the Internet of things, satellite positioning and Internet credit, will promote the sound and long-term development of the industry.

Appendix 1 Survey Methodology

## I. Survey Methodology

(I) Survey on Individual Internet Users

1.1 Survey Population

Chinese permanent residents at the age of 6 or above who have residence fixed-line telephones (including home phones, PHS and dormitory telephones) or mobile phones

◇ Sample size

There were 30,000 survey samples in total covering 31 provinces, autonomous regions and municipalities directly under the central government in Mainland China.

◇ Division of survey population
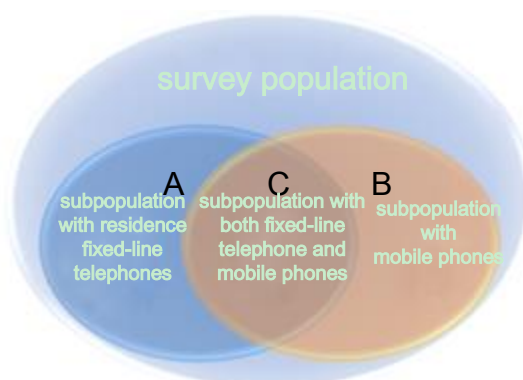
The survey population can be divided into three categories:

Subpopulation A: Survey subpopulation using residence fixed-line telephones (including residents with home phones, PHS users, students with dormitory telephones, and other users with dormitory telephones);

Subpopulation B: Survey subpopulation with mobile phones;

Subpopulation C: Survey subpopulation with both residence fixed-line telephones and mobile phones (there is an overlap between subpopulation A and subpopulation B, and the overlapped part is subpopulation C), C=A∩B.

1.2 Sampling Method

CNNIC surveys subpopulation A, B and C. Double sampling is adopted for the survey so as

to cover as many Internet users as possible. The first sampling frame is subpopulation A, the people with residence fixed-line telephones. The second sampling frame is subpopulation B, the people with mobile phones.

For the survey population with fixed-line telephones, stratified two-stage sampling is adopted. To ensure the sufficient representativeness of samples, the whole country is divided into 31 tiers according to the province, autonomous region and municipality directly under the central government and the sampling is made independently at each tier.

The self-weighted sampling method is adopted for each province. The sample sizes are allocated for each district, city and prefecture (including the governed districts and counties) in accordance with the proportion of the people at the age of 6 or above in the local area covered by residence fixed-line telephones in the total population covered in the whole province.

Sampling in subpopulation B is the similar to that in subpopulation A. The whole country is divided into 31 tiers according to the provinces, autonomous regions and municipalities directly under the central government, and sampling is made independently in each tier. Samples are allocated in accordance with the proportion of the residents in each district or city, in order to make the sample allocation in each province conform to the self-weighting method.

To ensure the residence fixed-line telephones are taken with almost the same probability in each district, city or prefecture, that is, the local bureau number with more residence fixed-line telephones will more likely be taken, and for easier operability in the visit and implementation work, the residence fixed-line telephone numbers in each district, city and prefecture are taken according to the following procedures:

For mobile phone user groups, all mobile bureau numbers in each district, city and prefecture are sampled; a certain quantity of 4-digit random numbers are generated according to the valid sample size in each district, city or prefecture, and then combined with the mobile bureau numbers in each district, city or prefecture to form a number library (local bureau number + the random 4-digit number); randomly order the number library; dial and visit the randomly ordered number library. Survey of the subpopulation with fixed-line telephones is similar to that of the subpopulation with mobile phones: a random number is generated and combined with the local bureau number to form a telephone number, and then such number is dialed and visited. To avoid repeated sampling, only residence fixed-line telephones are visited.

1.3 Survey Method

The computer-assisted telephone interviewing (CATI) system is adopted for the survey.

1.4 Differences between survey population and targeted population

A study for the subpopulation who are not covered by telephones at the end of 2005 by CNNIC shows that Internet users are very few in this subpopulation. Currently, the subpopulation is downsizing gradually with the development of our telecom industry. In this survey, there is an assumption, i.e.

Internet users who are not covered by fixed-line telephones and mobile phones are negligible.

(Ⅱ) Automatic Online Search and Data Report

Automatic online search is used to conduct technical statistics about the quantity of domain names and websites, and their geographical distribution. Statistical data for reporting mainly includes the number of IP addresses and international Internet gateway bandwidth.

2.1 Total Number of IP Addresses

The data of IP addresses counted by provinces come from the IP address databases of Asia-Pacific Network Information Center (APNIC) and CNNIC. Registered data in each database, that can clearly distinguish the provinces which the addresses belong to, can be added respectively by province to generate data of each province. As address allocation is a dynamic process, the statistical data are only for reference. The Ministry of Industry and Information Technology, as the national competent department for IP addresses, will require our IP address allocation organizations to report the IP addresses they own biannually. To ensure the accuracy of IP data, CNNIC will compare and verify APNIC statistical data and the reported data to confirm the final quantity of IP addresses.

2.2 Total Number of Websites in China

It is worked out by CNNIC according to the list of domain names. The list of domain names with .CN and .中国 comes from the CNNIC database, while the list of gTLDs comes from relevant international domain name registries.

2.3 International Internet Gateway Bandwidth

Through a reporting system, the Ministry of Industry and Information Technology can obtain

on a regular basis the number of total bandwidth of Internet connecting Chinese carriers with other countries and regions. The reported data are included in the Statistical Report on Internet Development in China.

II. Definitions of Terms in the Report

◇ **Internet Users:** Chinese residents at the age of six or above who have used the Internet in the past 6 months.

◇ **Mobile Internet Users:** Internet users who have used mobile phones to access and surf the Internet in the past six months, but not limited to those surfing the Internet via mobile phones only.

◇ **Computer Internet Users:** Internet users who have used computers to access and surf the Internet in the past 6 months, but not limited to those surfing the Internet via computers only.

◇ **Rural Internet Users:** Internet users who have been living in rural areas of China in the past six months.

◇ **Urban Internet Users:** Internet users who have been living in urban areas of China in the past six months.

◇ **IP Address:** As the basic resource on the Internet, the IP address functions to identify computers, servers and other devices connected to the Internet. Connection with the Internet can be realized only when an IP address (in any form) is acquired.

◇ **Website:** It refers to the web sites with domain name itself or functions to identify computers, servers and other devices connected to the Internet. Connection with the IgTLD. The registrant of the website is within the territory of P.R.C. For example: for the domain name of "cnnic.cn", it has only one website and the corresponding web address is "cnnic.cn" or "www.cnnic.cn". Other web addresses like "whois.cnnic.cn" and "mail.cnnic.cn" with such domain name as the suffix are regarded as different channels of the website.

◇ **Scope of Survey:** Unless otherwise expressly indicated, data in this Report only refer to mainland China, excluding Hong Kong, Macao and Taiwan.

◇ **Deadline of survey data:** The deadline of the statistical survey data is June 30, 2017.

Appendix 2 Attached Tables of Basic Internet Resources

Table 1 the Number of IPv4 Addresses in Different Regions of China

Region	Number of Addresses	Equivalence
Mainland China	338,451,968	20A+44B+94C
Taiwan	35,512,832	2A+29B+226C
Hong Kong SAR	11,794,432	179B+248C
Macau SAR	333,056	5B+21C

Table 2 Allocation of IPv4 Addresses among Organizations in Mainland China

Organization name	Number of Addresses	Total Number of IPv4 Addresses
China Telecom	125,763,328	7A+126B+255C
China United Network Communications Corporation	69,866,752[note1]	4A+42B+21C
CNNIC IP Address Allocation Alliance	61,581,056[note2]	3A+171B+167C
China Mobile Communications Corporation	35,294,208	2A+26B+140C
China Education and Research Network	16,649,728	254B+14C
China Tietong Telecommunications Corporation	15,796,224[note3]	241B+8C
Others	13,500,672	206B+1C

Total	338,451,968	20A+44B+94C

Data sources: APNIC and CNNIC

Note 1: The addresses of China United Network Communication Limited include the addresses of former China Unicom and former China Netcom. Specifically, the IPv4 address 6316032 (96B+96C) of former China Unicom is assigned by CNNIC;

Note 2: As a national Internet registry (NIR) approved by APNIC and national competent authorities in China, CNNIC has organized ISPs, enterprises and public institutions of certain size in China to set up IP Address Assignment Alliance of China. So far, the total number of IPv4 addresses held by the members of CNNIC IP Address Assignment Alliance is 83,693,312, equivalent to 4A+253B+15C. The IPv4 addresses of the members of IP Address Assignment Alliance of China listed in the above table do not include those IPv4 addresses already assigned to former China Unicom and Tietong.

Note 3: The IPv4 addresses of China Tietong Telecommunications Corporation are assigned by CNNIC;

Note 4: The deadline for the above statistical data is June 30, 2017.

Table 3 the Number of IPv6 Addresses in Different Regions of China

Region	Number of Addresses
Mainland China	21,283 blocks/32
Taiwan	2,361 blocks/32
Hong Kong SAR	320 blocks/32
Macau SAR	5 blocks/32

Table 4 IPv6 Address Allocation in Mainland China

Organization name	Number of IPv6 Addresses (/32Note 1)
CNNIC IP Address Allocation Alliance	6524 Note 2
China Telecom	4099
China United Network Communications Corporation	4097
China Mobile Communications Corporation	4097
China Tietong Telecommunications Corporation	2049 Note 3
China Education and Research Network	18
China Science and Technology Network	17 Note 4
Others	382

Data sources: APNIC and CNNIC

Note 1: /32 as shown in the IPv6 address allocation table is a method to present IPv6 addresses, and the corresponding number of addresses is $2^{(128-32)} = 2^{96}$.

Note 2: At present, the total IPv6 addresses held by the members of IP Address Allocation Alliance of CNNIC are 8,590/32. The IPv6 addresses held by the members of

IP Address Allocation Alliance listed in the above table do not include those IPv6 addresses already assigned to China Tietong and CSTNET.

Note 3: The IPv6 addresses of China Tietong Telecommunications Corporation are assigned by CNNIC.

Note 4: The IPv6 addresses of CSTNET are assigned by CNNIC.

Note 5: The deadline for the above statistical data is June 30, 2017.

Table 5 the Proportion of IPv4 Address in Each Province/Autonomous Region/Municipality Directly under the Central Government

Province/Autonomous Region/Municipality Directly under the Central Government	Proportion
Beijing	25.48%
Guangdong	9.53%
Zhejiang	6.47%
Jiangsu	4.76%
Shanghai	4.51%
Shandong	4.89%
Hebei	2.85%
Liaoning	3.34%
Henan	2.63%
Hubei	2.39%
Sichuan	2.77%
Fujian	1.94%
Hunan	2.37%
Shaanxi	1.63%
Anhui	1.65%
Heilongjiang	1.21%
Guangxi	1.38%
Chongqing	1.68%
Jilin	1.21%

Tianjin	1.05%
Jiangxi	1.73%
Shanxi	1.28%
Yunnan	0.98%
Inner Mongolia	0.78%
Xinjiang	0.60%
Hainan	0.47%
Guizhou	0.44%
Gansu	0.48%
Ningxia	0.28%
Qinghai	0.18%
Tibet	0.13%
Others	8.93%
Total	100.00%

Data sources: APNIC and CNNIC

Note 1: The above IP address statistics are for the provinces/autonomous regions/municipalities where the IP address owners are located.

Note 2: The deadline for the above statistical data is June 30, 2017.

Appendix 3 Organizations Supporting the Survey

We would like to express our heartfelt thanks to the following organizations that have provided strong support for the collection of basic resources data in this survey. (Not listed in any particular order)

China Telecom

Network Center of CERNET

Network Center of CSTNET

China Unicom

China Mobile Communications Corporation

China Organizational Name Administration Center

Alibaba Cloud Computing Co. Ltd.

Beijing Guoxu Network Technology Co., Ltd.

Beijing Lanhaijiye Technology Co., Ltd.

Beijing Wangzun Technology Co., Ltd.

Beijing Xinwanghulian Software Service Co., Ltd.

Beijing Xinwangshuma Technology Co., Ltd.

Beijing SanFront Information Technology Company

Beijing Zhongwan Network Technology Co., Ltd.

Beijing Zhongxitaian Technology Service Co., Ltd.

Beijing Zihai Technology Co., Ltd.

Chengdu Feishu Technology Co., Ltd.

Chengdu Shijidongfang Network Communication Co., Ltd.

Chengdu West Dimension Digital Technology Co., Ltd.

Chongqing Zhijia Information Technology Co., Ltd.

Foshan Yidong Network Co., Ltd.

Fujian Litian Network Technology Co., Ltd.

Fuzhou Zhongxu Network Technology Co., Ltd.

Guangdong Huyi Network IPR Co., Ltd

Guangdong Jinwanbang Technology Investment Co., Ltd.

Guangdong NiceNic Net Inc.

Guangdong Eranet International Limited

Guangzhou Mingyang Information Technology Co.,Ltd.

Henan Weichuang Network Technology Co., Ltd.

Jiangsu Bangning Technology Co., Ltd.

Xiamen Nawang Technology Co., Ltd.

Xiamen 35.com Technology Co., Ltd.

Xiamen Shangzhong Online Technology Co., Ltd.

Xiamen ZZY Network Service Co., Ltd.

Xiamen eName Technology Co., Ltd.

Shanghai Oray

Shanghai Hufu Information Technology Co., Ltd.

Shanghai CNDNS.COM

Shanghai Oweb Network Technology Development Co., Ltd.

Shanghai Online Information Network Co., Ltd.

Shanghai Yovole Network Co., Ltd.

Tianjin Zhuiri Technology Development Co., Ltd.

Yantai DNSPod Inc.

EJEE Group Beijing Co., Ltd.

Zhejiang 22net Inc.

Zhengzhou Shijichuanglian Electronic Technology Development Co., Ltd.

Zhengzhou Zitian Network Technology Co., Ltd.

ChinaNet Technology（SuZhou）Co., Ltd.

Appendix 4 Introduction to CNIDP

cnidp.cn -- open and shared Internet statistical data and services

◆Launched and run by CNNIC

◆Providing Internet statistical data and services for free

◆Reflecting the situation of Internet development in China objectively and timely

Website of the platform: www.cnidp.cn

Introduction to the Platform

    The China Internet Information Data Platform, launched and run by CNNIC, adopts the research method of fixed sample panel to reflect multiple facets (macro and micro) of the Internet development situation in China and provide multifaceted decision-making support for the participants of the Internet industry, by investigating the Internet using behavior data of Chinese Internet user samples collected at the client-side continuously in real time and by analyzing those data statistically.

Function Demonstration

Statistical data

Provide weekly, monthly, quarterly and half-year statistical data including the covered users, visiting times, page views, visiting duration and other indicators for domestic mainstream websites/software; the data are updated within no more than 3 days.

User characteristics

Provide multi-dimensional structural distribution data including gender, age, education background, occupation, income, region and tier of city corresponding to mainstream domestic websites/software.

Overlap analysis

Make statistics about user group overlaps and the structural distribution of different user groups corresponding to different websites/software.

Trend comparison

Provide detailed historical statistics on a daily basis corresponding to mainstream domestic websites/software so as to reflect their trends of historical changes.