

Czech University of Life Sciences Prague

Faculty of Economics and Management

Economics and Management



Bachelor Thesis

Analysis of Chinese E-Commerce Market

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

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BACHELOR THESIS ASSIGNMENT

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Economics and Management

Thesis title

Analysis of Chinese E-commerce Market

Objectives of thesis

The aim of the thesis is to evaluate the development of China's e-commerce market, analyze the influencing factors of its development, and predict the future development direction.

Methodology

- Data analysis
- SWOT analysis
- Quantitative analysis

The proposed extent of the thesis

40 – 60 pages

Keywords

Chinese Market, e-commerce, e-payment, Alibaba

Recommended information sources

East-Commerce: China E-Commerce and the Internet of Things, By Marco Gervasi, ISBN 978-1-119-23088-5
Encyclopedia of E-Business Development and Management in the Global Economy (Chapter 50
Understanding E-Payment Services in Traditionally Cash-Based Economies: The Case of China), By In
Lee, ISBN 978-1-61520-611-7 (hardcover) – ISBN 978-1-61520-612-4 (ebook)
China's Emerging New Economy: The Internet and E-commerce, By John Wong, Seok Ling Nah, ISBN
981-01-4495-9
UNLOCKING THE WORLD'S LARGEST E-MARKET : A GUIDE TO SELLING ON CHINESE SOCIAL MEDIA, By
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Declaration

I declare that I have worked on my bachelor thesis titled " Analysis of Chinese E-Commerce Market" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 12.03.2022

_____Dong Yuxin_____

Acknowledgement

I would like to thank Ing. Tomáš Maier, Ph.D. for his advice and support during my work on this thesis.

Analysis of Chinese E-Commerce Market

Abstract

This thesis mainly analyses the influencing factors of Chinese e-commerce market. In the practice part, it first analyses and discusses each factor separately, discusses the new trend and new industry of China's e-commerce market, and takes Taobao as a separate case. Then the thesis uses the linear regression equation of empirical research to summarize the influence degree of hypothetical influencing factors of China's e-commerce market from 2004 to 2020 and puts forward suggestions for future development according to the analysis.

Keywords: Chinese e-commerce market, Third-party payment, Logistics, Live broadcast, Online shopping, Taobao, Empirical analysis, Influencing factors

Analýza čínského E-commerce trhu

Abstrakt

Tato bakalářská práce primárně analyzuje faktory ovlivňující čínský e-commerce trh. V praktické části se nejprve rozebírají a analyzují jednotlivé faktory, pojednává se zde o novém trendu a novém odvětví čínského e-commerce trhu. Dále se v práci zvláště rozebírá vybraný podnik Taobao. Poté se s využitím lineární regrese empirického výzkumu zjišťuje míra vlivu hypotetických faktorů ovlivňujících čínský e-commerce trh v letech 2004 až 2020 a předkládají se návrhy pro budoucí vývoj podle analýzy.

Klíčová slova: čínský e-commerce trh, platby třetí stranou, logistika, živé vysílání, online nakupování, Taobao, empirická analýza, ovlivňující faktory

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1. Introduction

In recent years, with the rapid development of e-commerce in China, the transaction volume has reached a new high record, the application of e-commerce in various fields has been continuously expanded and deepened, the related service industry has been booming, the support system has been continuously improved, and the power and ability of innovation have been continuously enhanced. In 1998, Alibaba, made in China and other B2B e-commerce enterprises were established; In 2003, Taobao, Jingdong Mall and other B2C e-commerce platforms rose, and China's e-commerce started a 20-year rapid development. In 2016, China's e-commerce transaction volume has been equivalent to 35% of GDP, which plays an increasingly prominent role in promoting the supply side structural reform.

Today, we all have a very comprehensive understanding of e-commerce. Most Internet users know how to shop and trade through the Internet. With the improvement of various measures of logistics distribution and the rapid development of Internet technology, today, even if we are thousands of miles apart, it only takes a few seconds to complete the transaction through the Internet. Therefore, e-commerce is no longer just a concept as it was 20 years ago. With the development of these 20 years, it has become a habit of many of us.

The basic network conditions have been gradually improved, and the network access rate of enterprises has been continuously improved. In 2016, the proportion of online sales and online procurement increased by more than 10 percentage points, reaching 45.3% and 45.6% respectively. The e-commerce service industry has developed rapidly, with a market scale of 2.45 trillion yuan, an increase of 23.7% over the same period last year, of which the revenue scale of e-commerce platform service industry has reached 400 billion yuan; The market scale of e-payment, logistics express, e-certification and other supporting services has reached 950 billion yuan, and 70% of the National Express business volume comes from e-commerce; Online store construction, agent operation, information processing, data analysis, personnel training and other derivative services have developed rapidly, with a market scale of 1.1 trillion yuan. (Bingnan, 2017)

The vigorous development of China's e-commerce is inseparable from the high attention of the government, the collaborative promotion of various departments and localities, and the

active practice of the broad market players. Looking forward to the future, with the further development of the Internet plus and digital economy, China's e-commerce will usher in new opportunities. A new round of scientific and technological revolution has created a new scene for e-commerce, a new round of globalization has created new demands for the development of e-commerce, and economic and social structural changes have expanded new space for e-commerce. China's e-commerce will enter a new development stage of continuous growth in scale, continuous optimization in structure, and continuous enhancement in vitality. In general, China's e-commerce will present the development trend of service, diversification, internationalization and standardization.

At the same time, with the rapid growth of Internet users and e-commerce transactions, e-commerce has become a new trading channel for many enterprises and individuals, such as online stores of traditional stores, e-commerce departments of traditional enterprises and online banks of traditional banks. More and more enterprises have opened up online channels besides offline channels.

China's e-commerce can be regarded as a leader in the world, and the development of China's e-commerce is obvious to all. E-commerce is also a factor of economic globalization. The development of the world economy is inseparable from e-commerce. The emergence of e-commerce is an opportunity in the Internet era. However, there are some dilemmas in the development of e-commerce. This thesis analyses the current situation and advantages of China's e-commerce market from the national policy, online shopping, logistics and transportation, e-payment and other aspects, as well as the disadvantages and preventive methods that people must face and forecasts the future development trend.

2. Objectives and Methodology

2.1. Objectives

The main purpose is to analyse the influencing factors of the development of China's e-commerce market. Through the data analysis of various factors, and finally through the establishment of a regression model for empirical analysis, to get the influence of various factors on the development of China's e-commerce market. Finally, find out the main influencing factors, discuss the Countermeasures of adverse effects, and according to the

current policy and trend, combined with the regression model, make a basic suggestion of the future development.

2.2. Methodology

Data source

All data are obtained from the data statistics and annual report on the official website of the Chinese government. Among them are: China Internet development analysis report of China Internet Center; China e-commerce development report and China e-commerce market data test report issued by China e-commerce research center; E-commerce report of the Ministry of Commerce of the people's Republic of China

Chart method

The data analysis methods include chart method: through the data collected on the Internet (mainly from 2010 to 2020), the establishment of histogram and analyse the growth rate, the basic analysis of various influencing factors in recent years.

SWOT analysis

At the same time, we use SWOT analysis to analyse the main companies in various industries, such as Taobao on the Internet shopping platform. Through the analysis of the advantages, disadvantages, opportunities and threats of the enterprise, and then to the industry leader in all aspects of comprehensive and summary.

Combination of regression model analysis and Gretl statistical analysis

The main mathematical method of this thesis is to establish a regression model to analyse the impact of major factors on China's e-commerce market, and through Gretl statistical analysis to find out the main influencing factors.

3. Literature Review

3.1. The explanation of e-commerce

E-commerce usually refers to a wide range of business and trade activities all over the world. Under the open Internet environment, based on Browser / server application mode, buyers and sellers can carry out various business activities without meeting each other, realizing consumers' online shopping, online transactions and online electronic payment

between merchants, as well as various business activities, trading activities, online payment, etc Financial activities and related integrated service activities are a new business operation mode. (Tassabehji, 2003)

E-commerce is a business activity with information network technology as the means and commodity exchange as the center "E-commerce" is a kind of technology and means, and "commerce" is the core purpose. All means are produced to achieve the purpose. And e-commerce engineer is to use computer technology, network technology and other modern information technology to carry out related work.

Even though e-commerce has different definitions in different countries or different fields, its key is still the business model relying on electronic equipment and network technology. With the rapid development of e-commerce, it not only includes the main connotation of shopping, but also includes logistics distribution and other ancillary services. E-commerce includes electronic money exchange, supply chain management, electronic trading market, network marketing, online transaction processing, electronic data interchange (EDI), inventory management and automatic data collection system. In this process, the information technology used includes Internet, extranet, e-mail, database, electronic directory and mobile phone (Qu Yongdong, 08.2016)

Firstly, e-commerce is divided into broad sense and narrow sense. In a broad sense, e-commerce is defined as the use of various electronic tools in business activities; Narrow e-commerce is defined as mainly using the Internet to engage in business or activities. No matter the concept of e-commerce in broad or narrow sense, e-commerce covers two aspects: one is inseparable from the Internet platform, without the network, it cannot be called e-commerce; Second, it is a kind of business activity through the Internet.

The working group on the simplification of international trade procedures of the United Nations defines e-commerce as the conduct of business activities in electronic form, which includes the use of any electronic tool among suppliers, customers, governments and other participants. For example, EDI, web technology, e-mail share unstructured business information, and manage and complete various transactions in business activities, management activities and consumption activities (Chen Ping, 2013)

3.2. China's e-commerce market

At present, China's e-commerce transaction volume has completely exceeded that of the real industry. After years of development, China's e-commerce scale has ranked first in the world. China's e-commerce has made remarkable achievements: the transaction volume of e-commerce has increased from 21.8 trillion yuan in 2015 to 37.2 trillion yuan in 2020; The national online retail sales will reach 11.8 trillion yuan in 2020, and China has become the largest online retail market in the world for eight consecutive years; In 2020, the online retail sales of physical goods accounted for nearly a quarter of the total retail sales of social consumer goods, and e-commerce has become one of the main channels of residents' consumption; The number of e-commerce employees exceeds 60 million. The new business format and model of e-commerce have created a large number of new occupations and jobs and become an important "social stabilizer". (Liu, 2021)

China's e-commerce market is currently dominated by Alibaba's Taobao. Taobao is the first completely free C2C classification website in China. Since it was officially launched in July 2003, Taobao has made a three-year technical free service commitment, reducing the technical threshold for netizens to legally trade on the Internet through e-commerce. It is not only an important measure to effectively protect the legitimate interests of buyers and sellers in current online transactions, but also a realistic economic choice to effectively reflect the trading rules of network fair competition. Alipay platform is also a payment platform of Alibaba company. It is the security guarantee of China's Internet financial transactions and provides a new network transaction intermediary for collecting fees and collecting money for users. In essence, it breaks the three comprehensive systems of integrity, payment and logistics in the development of China's e-commerce. To a great extent, Alipay has greatly enhanced the safety and shopping interest of users on Taobao online shopping. It has become the most popular means of online payment in China. While expanding the popularity of enterprises and products, Taobao Mall has also improved its position in the eyes of consumers. (Wu, 2021) The proportion of live e-commerce in online retail has increased rapidly and has become a normal marketing mode and sales channel for the retail industry and online retail market. In 2021, the scale of live e-commerce is expected to exceed 2 trillion, and the growth rate far exceeds the traditional e-commerce model. According to the estimates of many institutions, the scale of China's live e-

commerce has exceeded trillion in 2020. Meanwhile, China Tiktok is the most popular live broadcast platform for e-commerce. On January 4, 2021, Tiktok held the first New Year shopping event for the Chinese New Year. As of January 20th, the total turnover of the first year of the year was 20.8 billion, with 14.3 billion of the total users watching and more than 320 million of the interactive users. The live broadcasting room has become an important stronghold of brand marketing. The live broadcasting e-commerce empowers high-quality domestic brands and promotes domestic consumption from two aspects: penetration sinking and export. (Ouyang, 2021) Commodity transportation is an important part of e-commerce. At present, China's e-commerce logistics industry has formed a complete industrial chain, and the logistics industry has achieved considerable economic benefits in the past few years. The logistics industry is in a stage of development and prosperity, and logistics service is also an important factor affecting consumer evaluation. Therefore, improving the service level of logistics industry plays an important role in the development of e-commerce. (Ren, 2021)

4. Practical Part

4.1. Analysis on the transaction volume of China's e-commerce market

In recent years, China's e-commerce market has developed rapidly. From the transaction volume of 4.6 trillion yuan in 2010 to 37.2 trillion yuan in 2020, we can see in the following figure1 that China's e-commerce transaction volume continues to grow every year. Especially in 2014-2015, the growth rate of transaction volume reached 55.7%. However, after 2015, the growth of China's e-commerce transaction volume decreased significantly, and the growth trend has been slowing down.

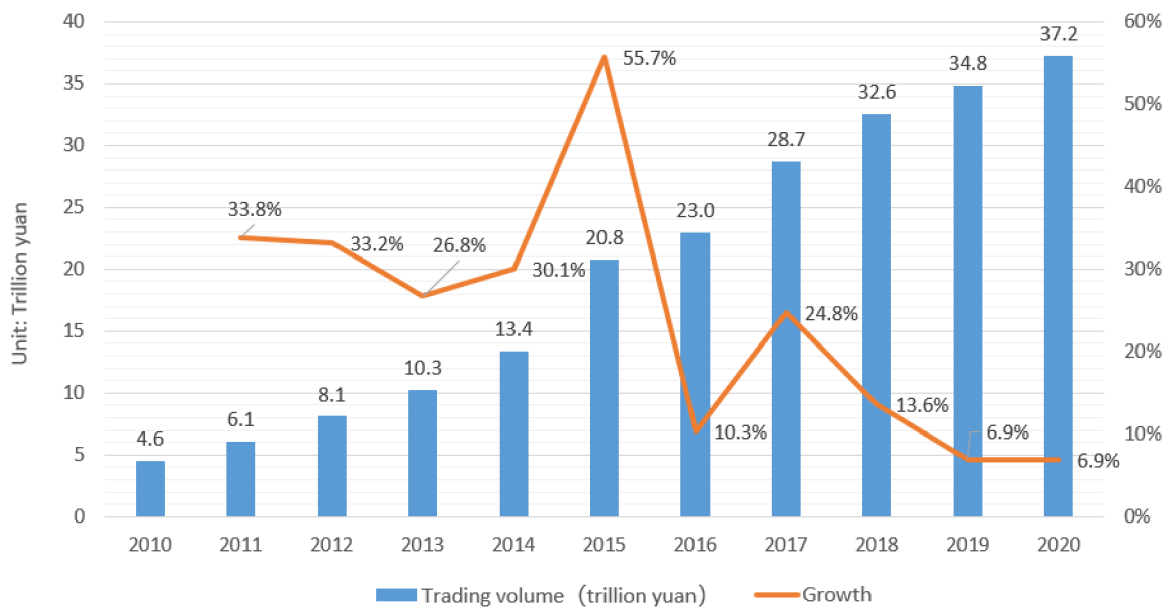


Figure 1 Scale and growth rate of e-commerce transactions in China from 2010 to 2020¹

Since 2011, China's online retail market has developed rapidly and the scale of online retail sales has expanded rapidly, but the growth rate has slowed down gradually in recent years. As can be seen in Figure 2 below, it has decreased from 68% in 2012 to 11% in 2020. At the same time, the total amount of online retail has changed from 0.8 trillion yuan in 2011 to 11.8 trillion yuan in 2020. Compared with figure 1 and Figure 2, it can be seen that their growth rate is basically similar, and the overall trend is also declining. However, it can be found that the growth rate of online retail is still greater than that of e-commerce transactions.

¹ Data source: data center of the Ministry of Commerce of the people's Republic of China, <http://data.mofcom.gov.cn/article/report/201710/36824.html>

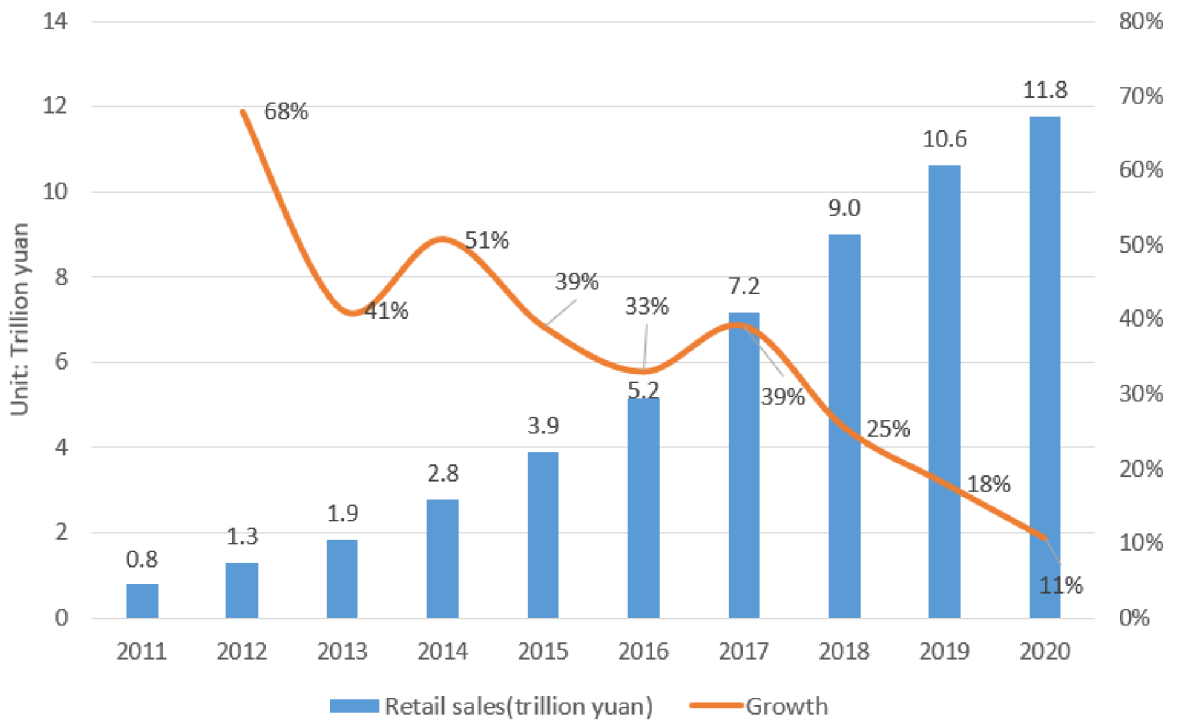


Figure 2 China's online retail sales from 2011 to 2020²

From 2011 to 2020, the proportion of China's online retail in the total retail sales of social consumer goods increased rapidly. As can be seen from Figure 3, it has reached 30.00% in 2020, an increase of 25.70 percentage points compared with 4.30% in 2011. At the same time, according to the data, we get the logarithmic equation $y = 58.158\ln(x) - 442.35$, R^2 is 0.9843, which shows that this equation can explain 98.45% of the data. From the perspective of trend, it is expected that the proportion of China's online retail in the total retail sales of social consumer goods will continue to grow in the future.

² Data source: data center of the Ministry of Commerce of the people's Republic of China, <http://data.mofcom.gov.cn/article/report/201710/36824.html>

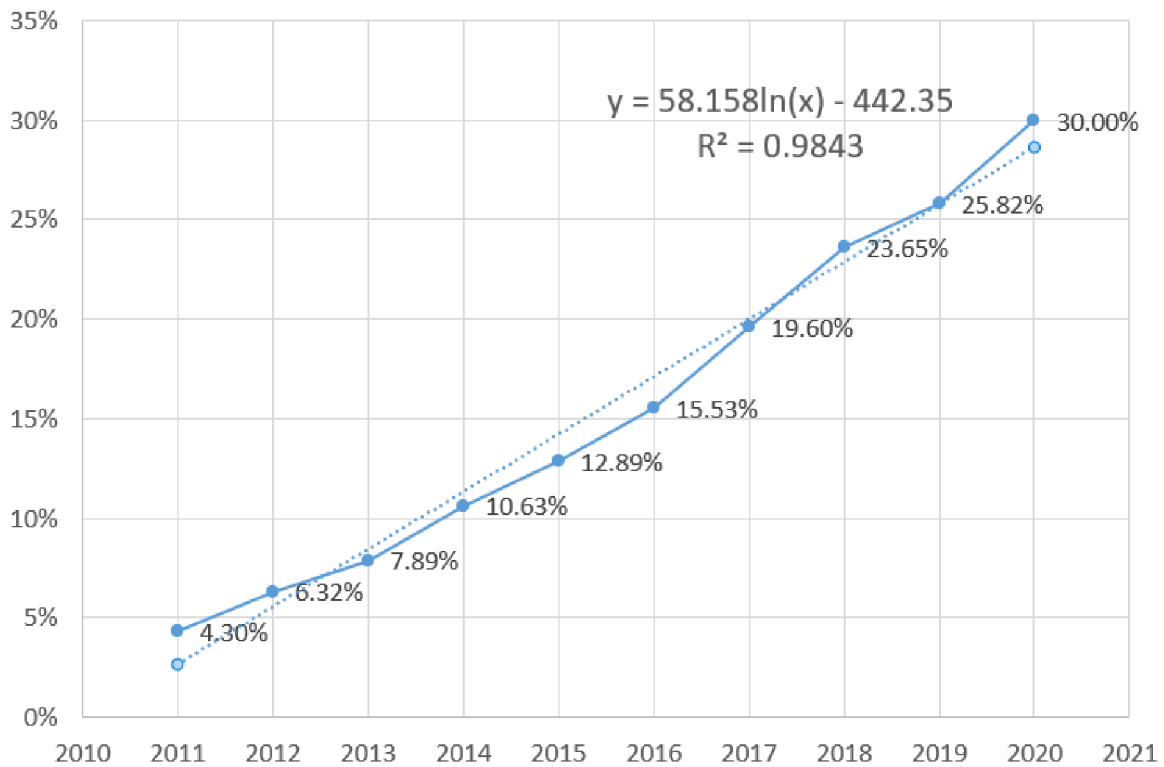


Figure 3 Proportion of online retail in total retail sales of social consumer goods from 2011 to 2020³

In recent years, with the rapid development of China's mobile e-commerce market, e-commerce enterprises have made efforts to launch mobile terminals, related products and promotional activities. The increase in the number of mobile phone users and Internet users, the popularity of smart phones and tablets, Internet speed, wireless broadband, tariff reduction and other external conditions have also promoted the development of mobile online shopping. Mobile has changed all aspects of people's lifestyle. Mobile shopping is an emerging thing, attracting some online shopping users to the mobile terminal. In Figure 4, we can see that by the end of 2020, the number of mobile online shopping users in China had reached 780.58 million, an increase of 73.09 million compared with March 2020, accounting for 79.2% of the number of mobile Internet users.

³ Data source: data center of the Ministry of Commerce of the people's Republic of China, <http://data.mofcom.gov.cn/article/report/201710/36824.html>

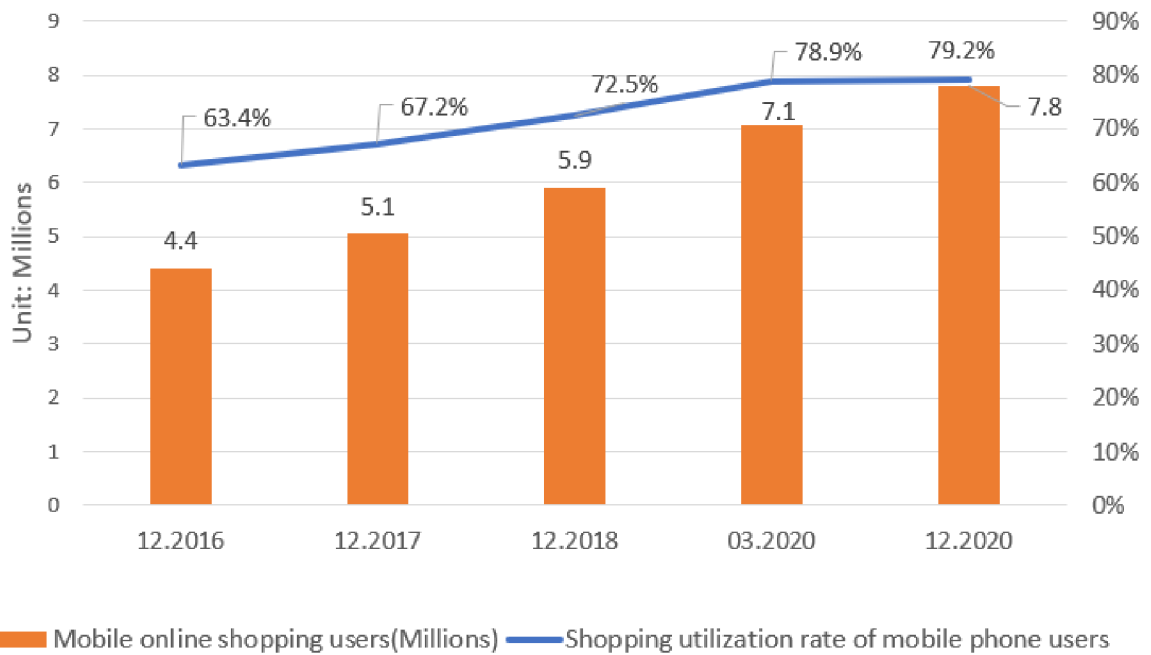


Figure 4 Scale of mobile online shopping users and shopping utilization rate in China from 2016 to 2020⁴

4.2. E-commerce platform in China

Hurun Research Institute released the list of China's top 10 e-commerce in 2020. The list lists China's top 10 local e-commerce enterprises, which are ranked according to their market value or valuation. The market value of listed companies is calculated according to the closing price on June 30, 2020, and the valuation of non listed companies refers to the published and latest round of financing valuation.

From Figure 5 below, we can know that Alibaba, the parent company of Taobao, has become the most valuable e-commerce in China with a value of 4.1 trillion; Meituan review increased by 80% in the last five months, JD doubled, Pinduoduo increased by 1.5 times, ranking second to fourth with the value of 919 billion yuan, 749 billion yuan and 728 billion yuan respectively; Ali's total domestic retail turnover was 6.6 trillion, JD and Pinduoduo were 2 trillion and 1 trillion respectively. The three enterprises accounted for

⁴ Data source: data center of the Ministry of Commerce of the people's Republic of China, <http://data.mofcom.gov.cn/article/report/201710/36824.html>

90% of China's online retail sales and 22% of China's total retail sales of social consumer goods last year.

Five top ten e-commerce companies are concentrated in Beijing; Secondly, there are two in Shanghai; One in Hangzhou, one in Guangzhou and one in Nanjing. Five top ten e-commerce companies are listed in US stocks, of which two are also listed in Hong Kong stocks; In addition, one is listed on Hong Kong shares and one is listed on a shares; Three are not listed.

Four of the world's top five listed e-commerce companies are from China; Amazon is the world's largest e-commerce. Suning Tesco is the only e-commerce in the top ten to transform from traditional retail.

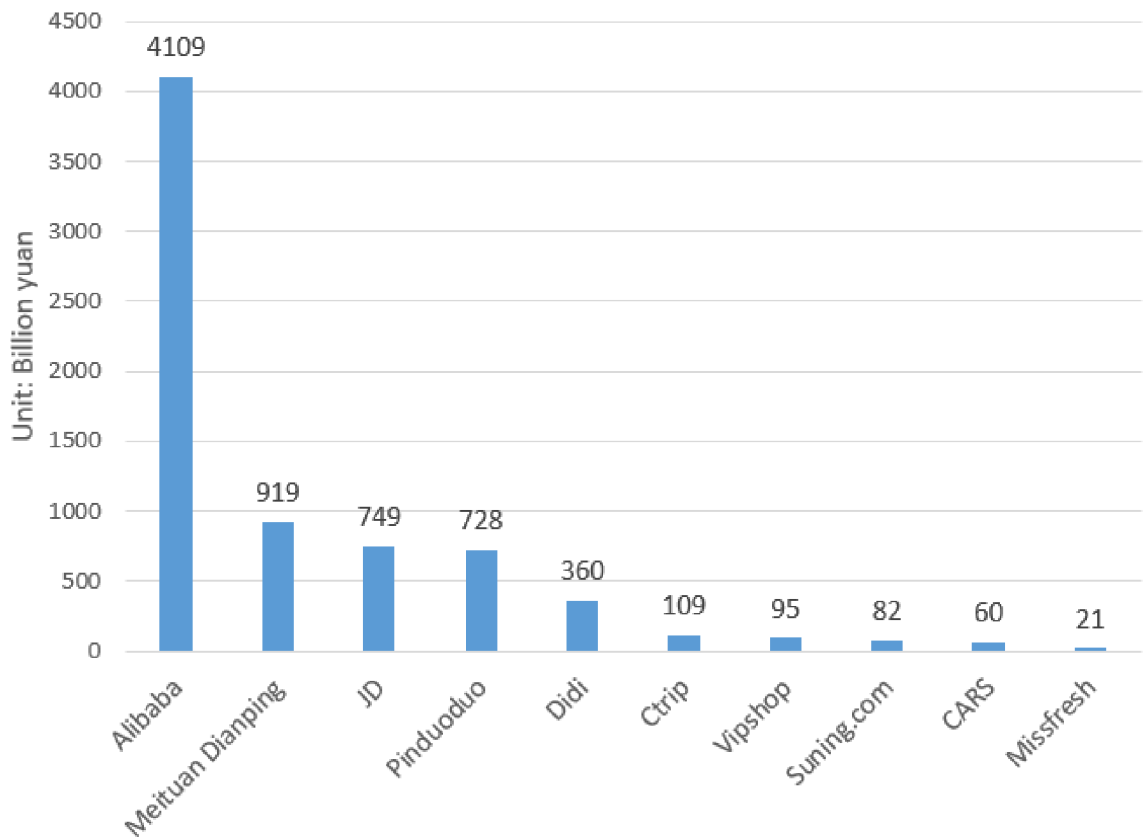


Figure 5 2020 Hurun top ten e-commerce platforms in China⁵

Alibaba

⁵ Data source: Hurun Report, <https://www.hurun.net/en-us/home/index>

After more than 20 years of development, Alibaba has grown from an e-commerce company to "a digital economy covering consumers, merchants, brands, retailers, third-party service providers, strategic partners and other enterprises". Focusing on consumer demand for goods, services and entertainment, Ali has built China's No.1 e-commerce platform (Taobao + Tmall), No.2 local life platform (ELEME Takeout+ KOUBEI life service) and No.3 long video website (Youku). Focusing on marketing, logistics, finance and technology in the transaction, Alibaba has built infrastructure such as Alibaba's mother, rookie, ant financial services and Alibaba cloud. Alibaba was listed in Hong Kong for the second time in 2019, with a financing scale of HK \$100 billion. In fiscal year 2020, the transaction volume of Alibaba's Chinese retail market reached RMB 6.6 trillion. In fiscal year, Alibaba's digital economy was fully developed. The annual number of active consumers in the world reached 960 million.

Meituan Dianping

Founded in 2010, Meituan Dianping business has expanded from group purchase to film and television ticketing, takeout, hotel tourism, comment, online car hailing, bicycles, fresh food and other non-meal takeout. In recent ten years, becoming China's leading local service e-commerce platform. In 2019, the number of trading users of the company exceeded 450 million, the number of active businesses reached 6.2 million, and 2.5 billion catering takeout transactions were completed.

JD

It was founded in 1998 and began to enter the field of e-commerce in 2004. At present, its business covers online retail, logistics, finance and digital technology, with nearly 400 million users and an annual turnover of more than 2 trillion yuan. Different from the platform models of Alibaba and Pinduoduo, JD focuses on the self-supporting model, selects and purchases brand goods, builds its own logistics system, sells directly to consumers and obtains the purchase and sales price difference of goods. JD also recently landed in Hong Kong stocks, with a financing scale of HK \$30 billion. JD disclosed in its prospectus for listing in Hong Kong that JD is transforming from a technology driven e-commerce company to a supply chain-based technology and service company. Tencent and JD are strategic partners.

Pinduoduo

Founded in 2015, it has achieved rapid development through the "social + e-commerce" model. In 2018, Pinduoduo was officially listed on NASDAQ. As of the fourth quarter of 2019, the total turnover of the multi-year business with only four years of development reached RMB 1 trillion, with a year-on-year increase of 113%, rapidly growing into the third largest e-commerce platform in China, with nearly 600 million annual active buyers, second only to Alibaba. Tencent holds 16.5% of Pinduoduo.

Didi

The one-stop mobile travel and living platform provides more than 550 million users with diversified services such as taxi, express, special bus, luxury car, bus, Valet driving, enterprise level, shared bicycle, shared motorcycle, automobile service, takeout and payment. On didi platform, tens of millions of car owners and drivers get flexible job and income opportunities, and transport more than 10 billion passengers a year.

Ctrip

Founded in 1999, headquartered in Shanghai. As a leading comprehensive travel service company in China, Ctrip has successfully integrated the high-tech industry and the traditional travel industry, providing more than 300 million members with a full range of travel services including wireless applications, hotel reservations, air ticket reservations, tourism and vacation, business travel management and tourism information. It was successfully listed on NASDAQ in 2003. Today, Ctrip is in a leading position in the online travel service market.

Vipshop

Founded in 2008, vip.com was launched in the same year COM, launched the Vipshop app on the mobile terminal in 2009. The company takes "brand discount + limited time rush purchase + genuine product guarantee" as its selling point and improves the user experience through a series of services to achieve rapid growth. In 2019, Vipshop acquired Shanshan Group for 2.9 billion yuan to realize the whole retail scene layout. Tencent and JD hold 9.6% and 7.6% of Vipshop respectively.

Suning.com

China's leading Omni channel smart retail service provider has gradually formed an omni channel, multi scene and full category smart retail service system and sales platform. Among the top ten companies, Suning is the only company that has changed itself. It has

spent nearly a decade on the transformation and transformation of the Internet. Facing the changing consumption patterns and consumption habits, Suning has realized the comprehensive extension of user services through online and offline scene interworking, digital operation and intelligent supply chain services and experiences that meet the needs of consumers.

CARS

China's leading one-stop platform for automobile consumption services. It has four main brands: melon seed second-hand car, Maodou new car, melon seed car raising and speed shooting, and three collaborative businesses: melon seed finance, car insurance and melon seed car rental. It provides users with whole industry chain services such as new car and second-hand car trading services, automobile finance, after-sales guarantee and automobile maintenance.

Missfresh

A fresh distribution platform covers 11 categories of fruits, vegetables, meat and eggs and dairy products, and provides users with 2-hour door-to-door cold chain distribution service. At the same time, it provides three kinds of unmanned convenience cabinets for enterprises free, including refrigerator, normal temperature shelf and freezer, which are used to store fruits, snacks, yogurt and other foods. Users can scan the code through wechat and make self-service payment. Tencent is an important investor.

4.3. Development trend of e-commerce market in China

4.3.1. Current situation of live broadcast e-commerce market

China's live broadcast e-commerce has gone through the embryonic stage (2015-2016), outbreak stage (2017-2019) and frenzy stage (since 2020). 2021 is a turning point, a year of paradigm transformation and value jump. COVID-19 has become the catalyst of live broadcast, and the popularity of live broadcasting has been rapidly improved, almost penetrating into all areas of consumer online life, and accelerating its role in the transformation of manufacturing and industrial transformation. The Kwai and Tiktok development has promoted the continuous upgrading of the electricity supplier ecology and the transformation of the online retail paradigm.

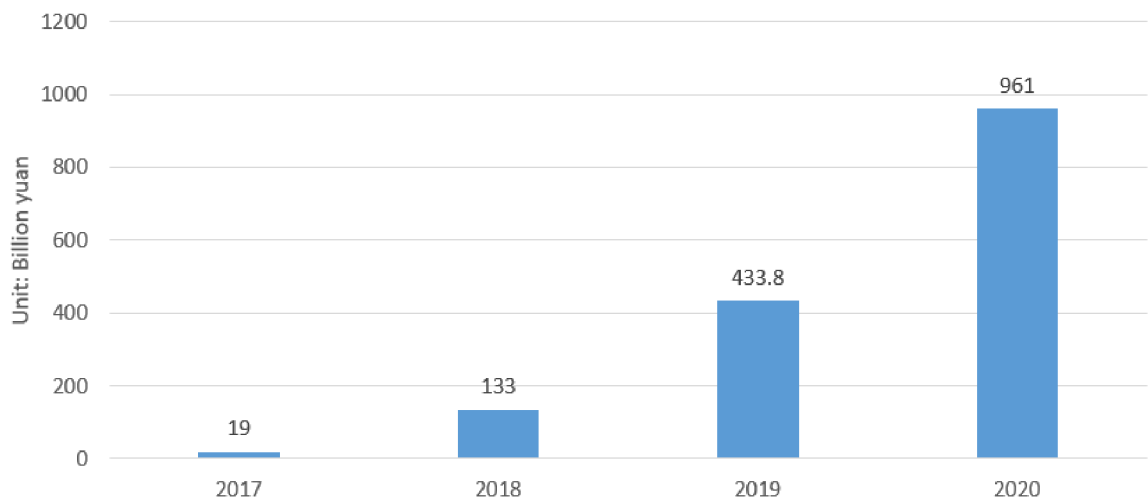


Figure 6 Transaction volume of live broadcast e-commerce market in 2020⁶

By analysing the data of live e-commerce, it is found that the live activity of "Shopping Festival on November 11" launched by Taobao in 2019 has brought about a transaction amount of about 20 billion yuan. In 2020, China's live platform Kwai, Tiktok transaction scale reached 916 billion yuan (Figure6). In 2020, Taobao live broadcast volume is over 400 billion yuan, and the live broadcast of the short-wave video platform is over 500 billion yuan, and the Kwai (short video platform) live electricity supplier sales about 300 billion yuan.⁷ Under the influence of such an environment, more and more network platforms have carried out live e-commerce business, which has derived the reform wave of domestic e-commerce industry.

The current e-commerce live broadcasting industry mainly relies on two platforms: one is the e-commerce platform, which introduces content creators into the live broadcasting room opened by the platform, using the method of "e-commerce + Live Broadcasting"; The other is the content platform, which realizes the purpose of live broadcasting e-commerce through the third-party e-commerce platform, using the method of "live broadcasting + e-commerce". From the analysis of all kinds of network anchors in China in October 2020, it can be seen that cyberstar account for 7%, store anchors account for 60%, and cyberstar with stores account for 33% (Figure 7). Most talent anchors who simply do

⁶ Data source: iiMedia Research, <https://www.data.iimedia.cn/>

⁷ Data source: iiMedia Research, <https://www.data.iimedia.cn/>

live broadcasting eventually set up their own e-commerce supply chain after having a certain number of fans.

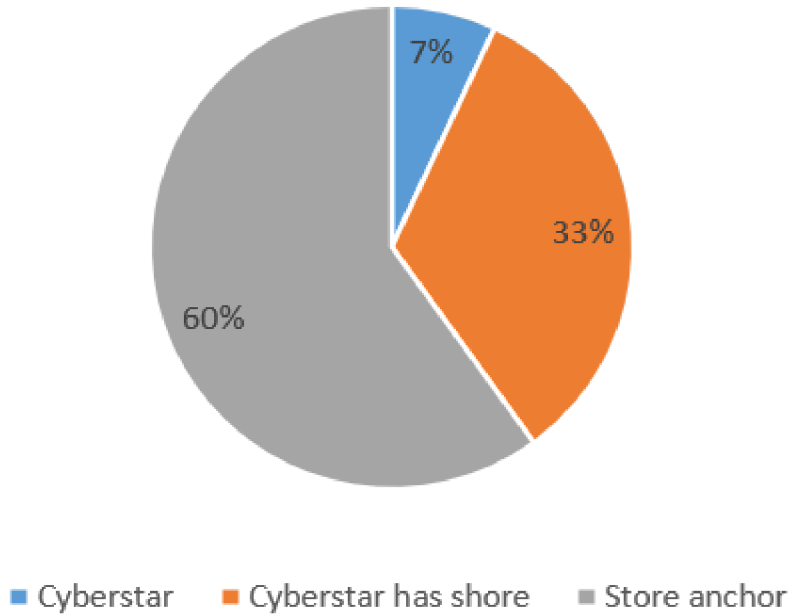


Figure 7 Analysis chart of various network anchors in China in October 2020⁸

4.3.2. Live broadcast e-commerce promotes agricultural economic development

Since 2014, China's rural e-commerce has ushered in a vigorous and rapid development momentum. From 2014 to 2019, rural online retail sales soared from 180 billion yuan to 170 billion yuan, an increase of 9.4 times. In 2019, there were nearly 13 million rural e-commerce in China, and the retail sales of county e-commerce reached 3096.16 billion yuan, a year-on-year increase of 23.5%; Among them, the online retail sales of China's poor counties reached 148.99 billion yuan, a year-on-year increase of 18.5%. In 2019, the online retail transactions of China's agricultural products reached 397.5 billion yuan, a year-on-year increase of 22%. According to the data from Pinduoduo, a famous e-commerce platform in China, in 2019 alone, the turnover of agricultural and side-line products through the platform reached 136.4 billion yuan and 240 million active buyers.

⁸Data source: iiMedia Research, <https://www.data.iimedia.cn/>

(Guo Donghong, Bai Junfei, Liu Yehong, Wang Jingjing, Qu Jiang, 2021) The types of agricultural products involved in e-commerce are very rich, ranging from characteristic local products (such as hairy crabs, coarse grains...) to bulk agricultural products (such as vegetables, tea, grains, dairy products, edible oil, etc.).

Live broadcasting has become a new infrastructure to promote the sales of agricultural products, farmers' employment and increase their income. For example, over the past three years, there have been 110 000 farmers' anchors in Taobao live broadcasting, with more than 2.3 million broadcasts, driving the sales of agricultural products to more than 5 billion yuan. At present, farmers' anchors are spread across 31 provinces and more than 2 000 counties in China, and the average monthly income has increased by two to three times. One farmer anchor promoted two jobs, bringing a total of 200 000 jobs.

4.3.3. Development trend of live broadcast e-commerce in China

There are two main forces to promote the development of China's live e-commerce. First, the large market scale provides a broad stage for technological innovation and model innovation and is the main driving force to promote the continuous innovation of live e-commerce; The second is the regulation of the industry, which promotes the industry to constantly abide by integrity and innovation and seek the maximum industry value. Only by adhering to the foothold of providing long-term value for consumers and traditional industries can the live e-commerce industry go far in the long run. From the perspective of value, China's live e-commerce will show the following development trends:

Trend 1: evolution to live broadcasting economy. Through connection and innovation, the live broadcast e-commerce extends from the sales end to the production end, realizes the equal power of manufacturers, service providers, ordinary merchants and large merchants, creates value beyond goods, opens up the whole links of design, production, circulation, consumption and service, and moves towards the 2.0 era of live broadcast e-commerce.

Trend 2: all people can broadcast, and all things can broadcast. Factory live broadcast, merchant live broadcast, stall live broadcast and offline live broadcast bases will rise. They do not rely on the appearance and eloquence of the anchor, but more on goods and services. The real anchor has an upper limit of physical strength, and the virtual anchor will become the development trend in the future. The products can be displayed in any

scene at any time through mobile live broadcasting. It is more and more likely to open the live broadcasting room to physical stores, brand origin and supply chain terminal landmarks. The cyberstar economy model dominated by "people" of MCN organization is expected to return to "service".

Trend 3: Live e-commerce continues to deepen the integration with the industrial chain and supply chain. In order to make the "people goods field" to the extreme, a digital flexible supply chain will be the key point of competition. A flexible supply chain with the ability of small batch, multi style and rapid return of orders can meet consumers' needs for commodity quality, price and logistics speed, and form a live E-commerce ecology with the integrated development of "live platform + MCN + merchant + supply chain".

Trend 4: Live e-commerce will go hand in hand in the commodity market and service market. The competition of live broadcast e-commerce will be more intense, and the market pattern of live broadcast e-commerce will evolve from monopoly competitive market to competitive market. Under the trend of deepening and refining, there will be some individual champions in refining the market in the future. Live e-commerce focuses on improving user experience, no longer regards users as data, but restores "traffic" to "people" and widens service boundaries. In the field of continuous product market segmentation, and in the service fields such as education, tourism, entertainment, sports and finance, the live e-commerce will show a vertical trend, and the segment market will become the main battlefield of competition, and the segment field or new market opportunities.

4.4. Electronic payment in China

In today's China market, the development of e-commerce cannot do without third party mobile payment. These two ways of payment that Alipay and Tencent's fortune paid (WeChat pay) are integrated into and dominated the lives of everyone. In Figure 8, we can see that in the third quarter of 2019, the scale of China's third-party payment transactions was about 56 trillion yuan, with a year-on-year growth rate of 15.2%. Since the first quarter of 2018, the year-on-year growth rate of the scale of third-party mobile transactions has continued to slow down. With the establishment of users' mobile payment habits and the continuous improvement of the coverage of mobile payment scenarios, The transaction

scale of China's mobile payment market has ended its rapid growth and entered a steady growth stage.

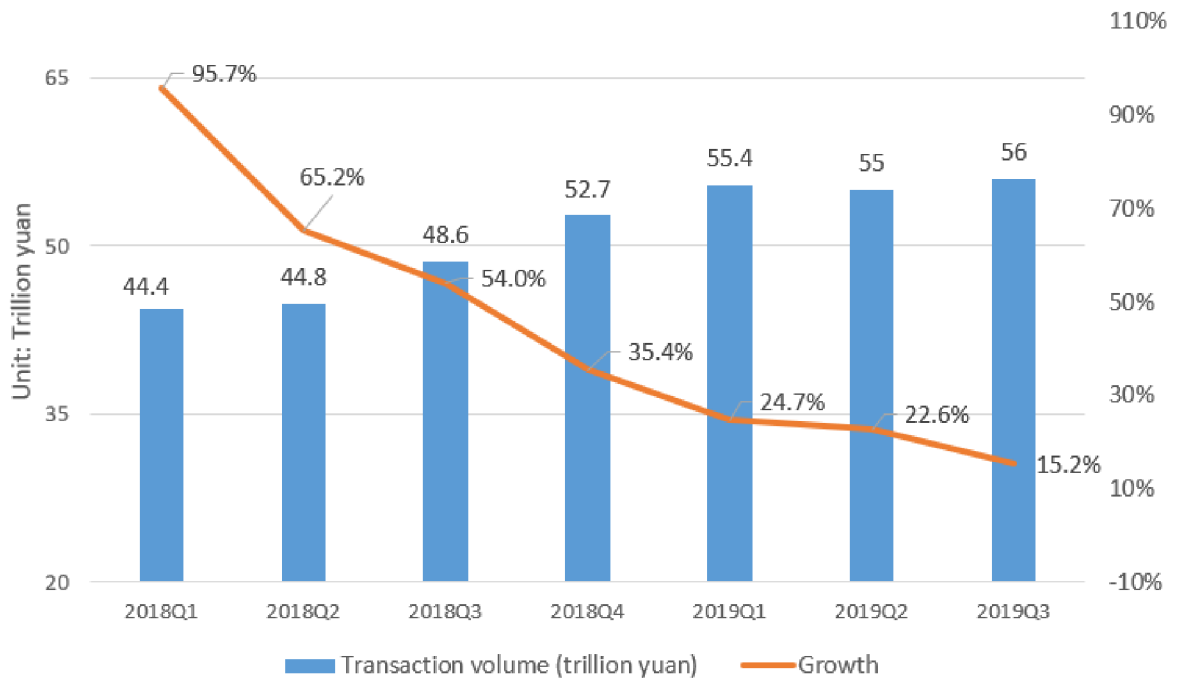


Figure 8 2018Q1-2019Q3 third party mobile payment transaction scale⁹

In Figure 9, we can find that in the third quarter of 2019, the offline code scanning payment market continued to grow at a growth rate higher than the overall market, driving the continuous increase of the proportion of mobile consumption sector. The proportion of mobile consumption sector in the transaction scale of third-party mobile payment increased from 21.4% in the second quarter of 2019 to 22.2%; As the penetration rate of mobile payment user group has reached a high level, and the demand for red envelope transfer among users is relatively stable without during the Chinese Spring Festival, the transaction scale of the personal application sector is becoming more and more stable, and the proportion of the sector decreases accordingly.

⁹ Data source: Iresearch, <https://www.iresearch.com.cn/>

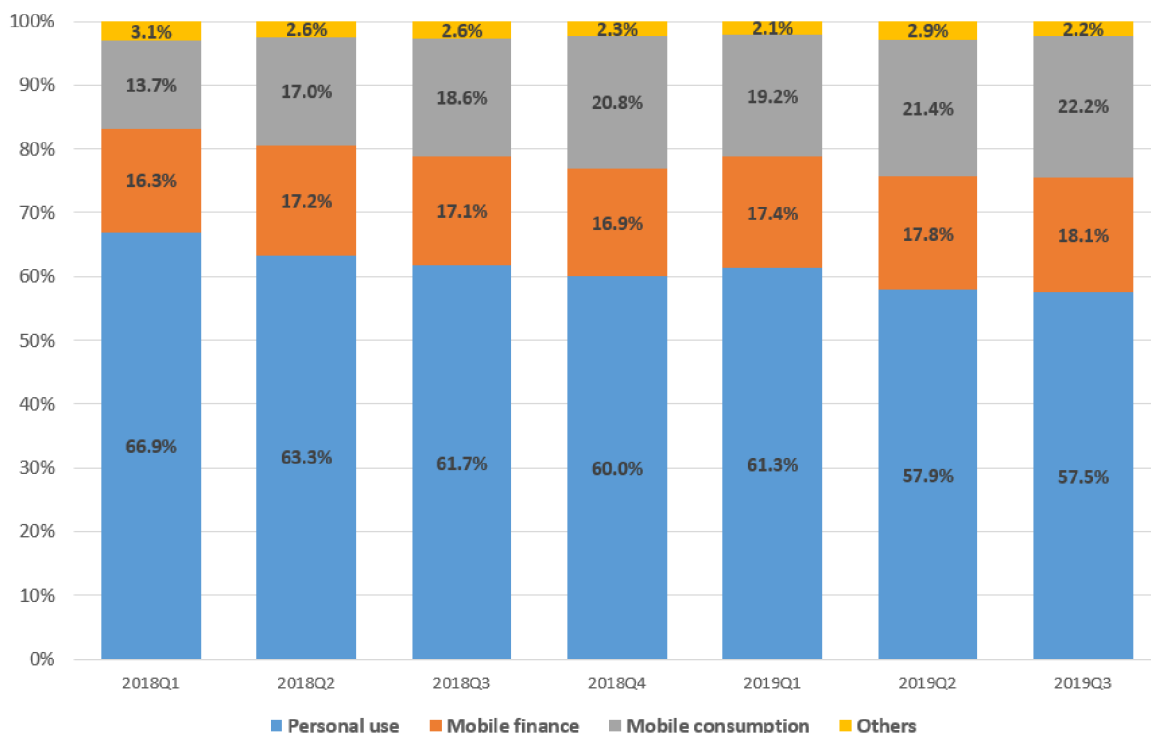


Figure 9 2018Q1-2019Q3 Scale structure of China's third-party mobile payment transactions¹⁰

4.4.1. The positive impact of e-commerce model on people under third-party payment

Improve people's way of life and promote the transformation of people's ideas

At this stage, the quality of Chinese people has improved, their concepts are advanced, and they are more and more willing to accept new things and try a new life. In the era of e-commerce, mobile payment is popular. In the third-party payment, Taobao, the main object of Alipay, and QQ, WeChat as the main carrier of the fortune paid account for 90% of the total transaction share. Mobile phone payment has made people realize the desire to go out without cash, greatly reducing the risk of loss and theft of funds. At this stage, the middle-aged and the elderly love WeChat payment more, while the young people prefer Alipay payment. No matter shop, fruit stand, clothing store, etc., the payment of two-dimensional

¹⁰ Data source: Iresearch, <https://www.iresearch.com.cn/>

code can be seen everywhere. The original business may be a commodity buyer who is not satisfied with the price of the goods, so that the profits will be reduced. Sending red envelopes during the Chinese New Year is the Spring Festival custom of the Chinese nation, and WeChat "robbing red envelopes" has also become a great fun for families. Families in different places may not be able to go home during the Spring Festival due to work and other reasons, while WeChat red envelopes make him feel the warmth of his home. In addition, in medical aspects, e-commerce applications are more convenient for people. In the past, long queues, payment, waiting for inquiring and taking inspection reports, all of them need no time and labour cost. Now, we can register online, online payment and mobile check reports through the WeChat official account or official APP of the hospital. After successful registration, you can also arrange other work in advance through the inquiry time reminded by the message, coordinate your own time, solve the problem of "difficult to see a doctor", and make e-commerce effectively improve people's lifestyle. The electronic diagnostic report contributes to the realization of paperless and promotes the saving of resources.

Promote the paperless process and share information

Under mobile payment, the people's demand for paper money is reduced, the circulation cost of money is reduced, the time cost of capital turnover is reduced, people's consumption is stimulated, and the development of the national economy is driven. The development of E-commerce makes information big data and makes people's information transparent to a certain extent. For judicial inspection organs, it greatly reduces the difficulty of investigating cases, social crime cases can be identified faster, and the society is more stable; On the other hand, the archives of bank card and credit card information are also a "threat" to corrupt elements. Strengthening the people's trust in the government will help to establish stable and harmonious social relations and highlight the core socialist values.

Promote the development of logistics and transportation industry and increase labour force

Under e-commerce, the emergence of a variety of shopping software enables people to shop without leaving home. The transaction mode of online shopping gives birth to the commodity transportation link, and the express industry is rapidly driven, so as to promote

the development and transformation of logistics mode. The common methods of enterprise logistics distribution mainly include self-operated logistics and third-party logistics. Generally, third-party logistics forms are more common. Many online stores will reach an agreement with specific express companies to be responsible for the delivery or return of goods in the store for a long time. On the one hand, the signed contract will reduce the freight cost of the store, on the other hand, improve the business volume and popularity of express companies. E-commerce drives the development of logistics and transportation industry, promotes the benign competition of express companies on brand, quality and service, and promotes the further transformation of the tertiary industry, which is bound to increase labour posts and promote social stability

4.4.2. Problems and Countermeasures of e-commerce model under third-party payment

The access threshold of e-commerce is low and there are few restrictions on industry norms

With the increase of the number of Chinese Internet users and the rapid growth of e-commerce transaction volume, the e-commerce industry has gradually become prosperous. From the legislative process of the e-commerce law of the people's Republic of China officially launched by the Standing Committee of the National People's Congress in 2013 to the formal adoption of the e-commerce law in 2018, China's attention to the e-commerce industry can be seen. As e-commerce is an emerging industry, if the "access threshold" is established according to the traditional rules, the higher registered capital and site restrictions are bound to make e-commerce in trouble. Under the role of market economy, we should minimize the intervention in the e-commerce market. Therefore, the access threshold is not set high. As a result, some shops without e-commerce qualification have mixed eyes and participated in it. The problems of lack of e-commerce qualification, poor product quality, low customer service quality and low customer satisfaction have become a major problem in the e-commerce industry.

Information sharing leads to the disclosure of personal information

Under the e-commerce mode, consumers are in a passive position. When they register, consumers name, home address, contact telephone number, bank ID number, and even

specific goods need to be uploaded through the customs. The number of consumers is bad for the store after they encounter false propaganda and goods, and pictures are seriously inconsistent. Being called by the other party to ask for cancellation, once the consumer loses his mobile phone, it will be a big trouble. In addition, during logistics transportation, the telephone number is left on the express box, which is convenient for criminals to use for telecommunications fraud.

Indulge in consumption and change consumers' consumption concept

After the advent of the era of e-commerce, third-party payment rises. At this time, people's perception of consumption and existing wealth is only through the numbers on the screen. Although the paper money paid in real life is the same as the price of mobile payment, the latter perceives less wealth, making it blindly optimistic and consumption irrational. The "November 11" e-commerce Carnival uses preferential signs to stimulate consumption and saving money has become a false proposition of conniving at consumption, which is like making up a reason to meet their consumption desire, thus forming a huge trap of ahead of consumption, resulting in people's monthly income exceeding their expenditure and living difficulties.

Mobile payment mainly focuses on young people with poor adaptability

With the development of science and technology and the Internet, smart phones have entered every household. Contemporary young people advocate freedom, are eager to pursue new things, love exploration, and are curious about smart phones. Even children in the lower grades of primary school know how to surf the Internet, play games and watch video. Contemporary young people are familiar with smart phone operation, No one can't help but lament the convenience brought by science and technology to mankind, but at this time, it has caused trouble for the travel activities of the elderly. The complicated operation of smart phones makes the elderly feel distressed. The decline of memory and blindness and deafness make them feel abandoned by the times. The popularity of electronic payment makes the circulation of paper money inconvenient, and the consumption of the elderly has become a big problem.

E-commerce still has the above problems while facilitating people's life. Therefore, the following countermeasures are put forward for the problems involved in e-commerce:

Implement problem responsibility and strengthen government supervision

Strengthening the supervision of e-commerce by the government does not mean that it does not encourage the operation of e-commerce. When conducting online shopping transactions, the government should earnestly implement the laws related to e-commerce, strictly abide by the relevant rules and regulations, strengthen the supervision and handling of violations of law and discipline, and regularly check the business license and relevant supporting materials of online stores to ensure the safety of the online trading environment, Irregularly conduct commodity quality inspection on the warehouses where e-commerce stores goods to ensure product quality. When there are problems in the transaction, we should earnestly implement the responsibilities of merchants, third-party payment platforms, express services or consumers to avoid mutual prevarication and unclear rights and responsibilities. Improve the reputation evaluation mechanism, improve the authenticity and satisfaction of consumers' service evaluation, and prohibit the adverse consequences of vicious competition among businesses.

Improve electronic technology and improve customer satisfaction

The improvement of technology mainly includes the following aspects: first, reduce the difficulty of e-commerce operation. So that as many people as possible can accept its operation method, or specify the prompt text in detail, so as to expand the audience, so as to expand the e-commerce market; Second, explore privacy protection technologies. For example, the name, contact or ID number of consumers can be automatically hidden or encrypted, so that criminals cannot solve them without causing unnecessary trouble. Third, enhance the stability of their own websites. Check and repair your website to avoid collapse due to a large number of visits.

Promote virtual reality technology and promote the development of science and technology

In 2007, the first virtual fashion store appeared in South Korea, which is similar to the function of fitting room. Customers can create their own three-dimensional image and find models with similar conditions by uploading their own photos, height, chest circumference, waist circumference and other data, so as to achieve the effect of customers trying on clothes in physical stores. In addition to clothing products, under the e-commerce platform, virtual reality technology can also be applied to experience projects, such as 3D adventure

games and tourism, which can not only greatly improve customer satisfaction, but also further promote the higher-level development of virtual reality technology.

4.5. Logistics and express in China

With the faster and faster development of e-commerce, consumers' demand for shopping has gradually shifted from offline to online. The annual "shopping street on November 11" activity detonates an upsurge. Commodity transportation is an important part of e-commerce, and logistics service is also an important factor affecting consumer evaluation. Therefore, improving the service level of logistics industry plays an important role in the development of e-commerce. At present, China's logistics industry is relatively complete on the whole and can basically meet the needs of e-commerce. However, the fragmentation and wide distribution of e-commerce affect the quality requirements of consumers for the logistics industry. The following is the current situation and advantages of e-commerce logistics industry:

High degree of informatization

The development of e-commerce is mainly carried out on the Internet, so information development has become the main feature of the development of logistics industry. The logistics industry of e-commerce is mainly introduced from European and American countries. The United States first proposed the logistics management technology of the electronic industry in 1915. The logistics industry of American e-commerce mainly includes the following links: purchasing, storing and equipping goods, and gradually realizing information management under the premise of the integration of commodity transportation industry. At present, the logistics industry has become an important part of the development of e-commerce and plays an important role in the development of e-commerce.

High degree of automation

Automated management and express delivery are another important feature of the development of the logistics industry. Since 2019, it has become a frequent phenomenon for consumers to pick up goods with ID code. Compared with the traditional logistics industry services, automated logistics management can effectively reduce the investment of human resources, save production costs and improve labour productivity. At the same

time, everyone's special ID code also increases the security of picking up and reduces the frequent errors in picking up. Most cities with high economic development level in China have realized the automation of logistics management and service, which not only improves the service efficiency, but also saves consumers' time cost.

High level of logistics service

Many large enterprises have appeared in the logistics industry of e-commerce in China, and the service level is getting higher and higher. At present, the service level of most logistics management companies in China is high. When there are errors and wear of goods, logistics companies can make corresponding compensation and secondary services in a very short time, which has won the trust of consumers. The development of logistics insurance in China has been quite mature. Consumers only need to pay a small cost to get perfect protection, improve consumers' consumption experience and ensure consumers' legitimate rights and interests. Logistics companies are also gradually improving the service system, gaining a higher market share and achieving the unity of social and economic benefits.

The fields involved are increasing, and the business model is gradually improved

With the continuous improvement of the development level of China's electronic trade, the commodity fields involved in the logistics industry are also increasing. For example, in the early stage of Taobao, it mainly engaged in clothing, beauty and video, and the goods transported by the logistics industry were also relatively concentrated. But now it has been extended to the fields of electronic equipment, furniture, medicine and so on. Matched with it, the physics industry has formulated more and more characteristic services according to the development needs of e-commerce. There are more and more cooperative enterprises in the logistics industry. With the continuous refinement of social division of labour, the specialization and differentiation trend of the logistics industry is becoming more and more obvious. In addition, another current situation of the logistics industry is the gradual increase of business models and presents a mixed situation of multiple business models. With the increasing demand for the logistics industry, more and more e-commerce platforms begin to use self-operated logistics, such as JD logistics and self-operated logistics enterprises of Haier and Suning. For electronic enterprises, the development of self-supporting enterprises can extend the production value chain of the industry, increase

economic income, reduce logistics costs, and occupy more loyal consumers in the logistics industry.

4.6. Case study: Taobao under Alibaba Group

In the context of new media, e-commerce relying on the Internet platform has become an important driving force for the rapid development of modern economy. The most representative is Taobao, the largest online shopping platform in China - Alibaba group. As the largest online shopping platform in Asia, since the establishment of Taobao in 2003, Taobao's own positioning is to build a free trading platform for individuals, businesses and individuals through the Internet platform. According to Alibaba group, in 2021 (from April 2020 to March 2021), the number of new active merchants on Taobao has reached the highest level in five fiscal years since 2017. Since 2017, the number of active merchants on Taobao has generally maintained a steady increase. Especially in the months after March 2020, the post epidemic recovery of commercial digital transformation, when the average number of new stores opened per day reached 40000. At present, Taobao has more than 1 million yuan of sales in the previous year, an increase of 50% over 2017. This data is far ahead of other online shopping platforms in China.

4.6.1. Research on innovative marketing strategy of Taobao

Experience marketing strategy

Taobao is the first completely free C2C classification website in China. Since it was officially launched in July 2003, Taobao has made a three-year technical free service commitment, reducing the technical threshold for netizens to legally trade on the Internet through e-commerce. It is not only an important measure to effectively protect the legitimate interests of buyers and sellers in current online transactions, but also a realistic economic choice to effectively reflect the trading rules of network fair competition. From the perspective of improving users' consumption experience, Taobao's mobile free card seems to better meet the consumption needs of Chinese users under the current market situation and has made great market advantages in how to attract a large number of users. The consumption experience and service experience of Taobao online store members directly cultivate Taobao users' consumption habits, satisfaction and trust in service providers.

Secure payment system and good corporate image

The Alipay platform is the security guarantee of China's online financial transactions. It provides a new type of network transaction intermediary for collecting fees and collecting payments. To a great extent, Alipay has greatly enhanced the safety and shopping interest of users on Taobao online shopping. It has become the most popular means of online payment in China. While expanding the popularity of enterprises and products, Taobao Mall has also improved its position in the eyes of consumers. Furthermore, when consuming, consumers will have a preconceived preference for this platform emotionally, which greatly increases the consumption probability of consumers.

Convenience of virtual store

It is the service tenet of each professional network marketing training institution to provide fast, convenient and thoughtful training services for consumers. Taobao link with the help of various network links, Taobao consumers can directly and quickly reach the link with Taobao's official website from a variety of sales channels, which greatly and effectively maintains the smooth channel between Taobao consumers and other consumers. At the same time, in order to effectively protect the legitimate interests of the majority of consumers and ensure the service quality of the goods sold, one-to-one commodity information consultation, feedback and docking services have been set up for the majority of consumers in terms of cash on delivery contact, timeliness during delivery and after-sales service.

Network chat function

Giving full play to the important function of Alibaba "Wangwang" online chat can not only promote online consumption in understanding the processing method of payment acceptance and payment, timely delivery and after-sales service, but also collect vouchers and share high-quality commodity information through online consumer friendship chat activities. Buyers and sellers can directly exchange commodity information with each other, making the information more transparent, Reciprocal buyer and seller. In addition, the "Taobao assistant" in online chat can help coordinate the disputes between the buyer and the seller fairly according to the chat records, so as to ensure the smooth operation of the transaction.

Logistics distribution

The shopping industry chain of Taobao online store is mainly composed of buyers and sellers, Taobao trading website platform and logistics transportation. The buyer can place an order directly on Taobao, and the seller can deliver the goods in time. Both the buyer and the seller can view the logistics information of the goods in real time and can score and evaluate each other for this pleasant transaction trip after delivery. In this huge industrial chain, logistics, information flow, business flow and capital flow have realized complete interconnection and electronic integration of information. In terms of logistics, Taobao is suitable to learn from other e-commerce about its fast distribution speed and establish centralized cargo warehouses all over the country, so as to coordinate the configuration of logistics and pay attention to reducing costs.

Promotion marketing strategy

Formulate promotion plans: member promotion, integral promotion, discount promotion, free sample promotion, gold coin promotion, etc.

Members, points promotion: members can not only enjoy shopping discounts, but also accumulate points and exchange them for free. Advantages: this promotion method can attract customers to come to the store again and introduce new customers to the store. It can not only make customers get more benefits, but also consolidate old customers, expand new customers and improve customers' loyalty to online stores.

Discount promotion: the most commonly used phased promotion method. Because discount promotion directly makes profits to consumers, the benefits felt by customers are very direct, especially for price sensitive consumers.

Buy give promotion: it is especially in line with the needs of the festival. By buying a certain amount of goods, the store will give a certain discount, so as to attract more people to buy a large amount of goods. Although the single piece profit will decrease after discount, the sales volume will increase, and the total sales revenue will not decrease. At the same time, it also increases the popularity of the store and has more customers, which will also drive future sales.

Free sample promotion: free promotion can achieve better promotion effect when new products are launched for trial, products are updated, and new markets are developed. Advantages: let customers have loyalty to products, and make new products not stagnate in inventory, resulting in overstock of goods.

Receive gold coins for tasks: this promotion method is mainly to release tasks in the form of games, so as to reward some behaviours of consumers. The amount of gold coins awarded by this means is limited and small. However, this task will be refreshed every day to facilitate consumers to log in and browse the sales page of Taobao every day and promote commodity sales; At the same time, almost every store recognizes that some gold coins can be used to offset the expenditure of real money, so that consumers can get a sense of happiness and improve their satisfaction. At the same time, businesses have also earned a profit of up to a few dollars and at least a few cents from the original price.

4.6.2. SWOT analysis of Taobao

Strengths

Taobao has a broad consumer market and a large consumer group. Moreover, compared with physical stores, their commodity prices are relatively affordable, and their types are relatively diverse. Yiyang Qianxi has diversified marketing channels: in the November 11th China Shopping Festival, there are many official advertising channels, including the TV advertisements of Chinese young idols, countless video advertisements and new forms of China's host and merchandise. As soon as the shopping festival was launched on November 11, 2020, hundreds of millions of people visited Taobao live studio. The inexhaustible promotion means, inexhaustible marketing creativity and the publicity means of keeping pace with the times have attracted the attention of many consumers. And Alibaba's Alipay provides convenience for Taobao, not only convenient to pay, but also allows users to open small "credit loans" for Taobao's shopping.

Weaknesses

Due to the current situation of many and scattered Taobao online stores, the logistics industry is in trouble during the "November 11 Shopping Festival" every year, resulting in a long delivery time of goods; Counterfeits are rampant in the market, and businesses create false prices. In the long run, these problems are extremely unfavourable to the reputation of businesses and are easy to cause the loss of consumer groups. Fortunately, thanks to the evaluation function of Taobao and the improvement of the domestic consumer rights platform, this disadvantage is slowly improving.

Opportunity

Due to the rapid development of the Internet and the popularity of smart phones, more and more people, including the elderly, are also exposed to online shopping. The current popular live delivery meets the current aesthetic taste and entertainment preference of Chinese people. Moreover, Taobao is very good at catering to consumers' consumption psychology and promoting consumption. In addition, the state has given great support to the e-commerce industry. For example, in 2015, the State Council issued preferential policies for the steady development of e-commerce, reduced the entry threshold of e-commerce enterprises, increased financial service support, encouraged employment and entrepreneurship in the e-commerce field, and protected the labour rights and interests of employees, all provide better conditions for the future development of e-commerce industry.

Threat

In the e-commerce industry, competition is fierce. At present, there are many shopping platforms on the market, such as Pinduoduo, Jingdong, etc. they not only hold large-scale promotional activities in the shopping street on November 11, but also actively hold annual TV parties, annual promotional activities and holiday promotional activities. Fierce competition from many parties poses a great threat to Taobao.

4.7. An empirical analysis on the influencing factors of China's e-commerce development

According to the previous analysis, great changes have taken place in China's e-commerce from 2004 to 2022. Therefore, I make an empirical research and Analysis on various factors affecting the transaction volume of e-commerce based on the data from 2010 to 2022.

4.7.1. Variable selection and assumptions

According to the previous research, the transaction volume of e-commerce has an important impact on logistics and third-party payment factors. At the same time, I consider that the development of the Internet and Internet users should also have an impact on this, and the increase of employees in e-commerce should also interact with the trading value of e-commerce. Table 1 shows the data I collected based on all factors considered.

YEAR	Trading volume (ten billion yuan)	Third party payment scale (ten billion yuan)	Number of internet users (million)	Total social logistics costs(ten billion yuan)	Total logistics amounts (ten billion yuan)	Logistics cost ratio	Number of e-commerce employees (ten thousands)
2004	93	1	9.4	290	3800	0.076	137
2005	130	2	111	340	4800	0.071	210
2006	155	5	134	380	6000	0.063	420
2007	217	10	210	450	7500	0.060	666
2008	314	28	298	550	9000	0.061	841
2009	367	80	384	610	9700	0.063	1003
2010	455	158	457	710	12540	0.057	1200
2011	609	265	531	840	15840	0.053	1350
2012	811	840	564	940	17730	0.053	1500
2013	1028	1240	618	1020	19780	0.052	1680
2014	1337	2330	649	1060	21350	0.050	1800
2015	2082	4900	688	1080	21920	0.049	2000
2016	2297	7870	731	1110	22970	0.048	2240
2017	2866	14830	772	1210	25280	0.048	2500
2018	3255	21960	829	1330	28310	0.047	3303
2019	3481	25110	884	1460	29800	0.049	4801
2020	3721	27100	989	1490	30010	0.050	7700

Table 1 All empirical research data on 2004-2020¹¹

Taking the e-commerce transaction volume as the dependent variable: and the third-party payment scale, the number of Internet users, total logistics amounts, total social logistics cost ratio (this is the ratio between the total cost of social logistics and the total amount of social logistics) and the number of e-commerce employees as the independent variables, a linear regression model is established:

$$y_t = f(x_1, x_2, x_3, x_4, x_5, x_6)$$

¹¹ Data source: China Internet Center's analysis report on China's Internet development; China e-commerce development report and China e-commerce market data test report issued by China e-commerce research center; E-commerce report of the Ministry of Commerce of the people's Republic of China (all reports are annual reports)

y_t : E-commerce's trading value

x_1 : Third party payment scale

x_2 : Number of internet users

x_3 : Total social logistics costs

x_4 : Total logistics amounts

x_5 : Logistics cost ratio

x_6 : Number of e-commerce employees

According to the practical significance of economics, I can make the following assumptions:

– $x_1 \uparrow \rightarrow y_t \uparrow$: If the scale of third-party payment increases, the e-commerce trading value increases

– $x_2 \uparrow \rightarrow y_t \uparrow$: If the scale of number of internet users increase, the e-commerce trading value increases

– $x_3 \downarrow \rightarrow y_t \uparrow$: If the total social logistics costs decrease, the e-commerce trading value increases

– $x_4 \uparrow \rightarrow y_t \uparrow$: If the total logistics amounts increase, the e-commerce trading value increases

– $x_5 \downarrow \rightarrow y_t \uparrow$: If the scale of logistics cost ratio decreases, the e-commerce trading value increases

– $x_6 \uparrow \rightarrow y_t \uparrow$: If the number of e-commerce employees increases, the e-commerce trading value increases

4.7.2. The trends analysis of time series by Gretl

Model 1: OLS, using observations 2004-2020 (T = 17)
Dependent variable: Yt

	coefficient	std. error	t-ratio	p-value	
const	-1753.14	1331.24	-1.317	0.2172	
X1	0.0577922	0.0161449	3.580	0.0050	***
X2	3.36140	1.63642	2.054	0.0670	*
X3	-9.52959	2.81777	-3.382	0.0070	***
X4	0.421344	0.105842	3.981	0.0026	***
X5	39146.1	20007.3	1.957	0.0789	*
X6	0.0291157	0.0831166	0.3503	0.7334	
Mean dependent var	1365.759	S.D. dependent var	1301.033		
Sum squared resid	277544.2	S.E. of regression	166.5966		
R-squared	0.989752	Adjusted R-squared	0.983603		
F(6, 10)	160.9679	P-value (F)	2.33e-09		
Log-likelihood	-106.5764	Akaike criterion	227.1528		
Schwarz criterion	232.9853	Hannan-Quinn	227.7325		
rho	-0.081932	Durbin-Watson	2.159397		

Figure 10 Data analysis 1 by Gretl

After importing the data into Gretl and regressing with OLS method, I got the above information. So I can get the regression model equation:

$$y_t = -1753.14 + 0.05779x_1 + 3.3614x_2 - 9.52959x_3 + 0.42134x_4 + 39416.1x_5 + 0.029116x_6 + \varepsilon_1 \quad (\varepsilon: \text{Error term})$$

Economic analysis and test

0.05779x₁: For every 10 billion yuan increase in the scale of third-party transactions, e-commerce trading value will increase by 577.9 million yuan.

3.3614x₂: For every 1 million users increase in internet users, e-commerce trading value will increase by 33.614 billion yuan.

-9.52959x₃: For every 10 billion yuan increase in total social logistics costs, e-commerce trading value will decrease by 95.2959 billion yuan.

0.42134x₄: For every 10 billion yuan increase in total social logistics amounts, e-commerce trading value will increase by 4.2134 billion yuan.

39416.1x₅: For every 1 unit increase in Logistics cost ratio, e-commerce trading value will increase by 39416.1 billion yuan.

$0.029116x_6$: For every 10 thousand units increase in number of e-commerce employees, e-commerce trading value will increase by 0.29116 billion yuan

The estimation of the model results shows that when other conditions remain unchanged, the changes of these factors will have a corresponding impact. From the results, it can be seen that these data are in line with the economic significance

Statistical analysis and test

Firstly, according to the significance analysis (P value) of independent variables, figure 10 clearly shows that the P values of independent variables x_1 , x_3 and x_4 are 0.0050, 0.0070 and 0.0026 respectively, which are significantly less than 0.05, that is, less than alpha, which indicates that they are statistically significant. The changes of the scale of the third-party market, the total cost of social logistics and the total amount of social logistics have a great impact on the trading value of e-commerce. The P values of x_2 and x_5 are 0.0670 and 0.0789. Although they are larger than 0.05, they are less than 0.01, which can be recognized as statistically significant, but it is only weak. It can also be said that the number of Internet users and logistics cost ratio only have a weak impact on the trading value of e-commerce. The P value of x_6 is 0.7334, which is significantly greater than 0.1, which is not statistically significant. Therefore, the number of e-commerce employees has no impact on the e-commerce trading value.

Secondly, we can see that the square value of R is 0.9896, which shows that this equation can explain 98.96% of the variation of data. The model well shows the regression linear relationship.

Finally, I can see that the F test of P-value is $2.33e-09$, which is clearly less than 0.05, that is, alpha, so this regression linear model has strong statistical significance.

Analysis of dependent variables and statistically significant independent variables

Through the above analysis, I think x_6 has no statistical significance. I omitted x_6 and analyzed the remaining independent variables more accurately, so I got the following results:

Model 1: OLS, using observations 2004–2020 (T = 17)

Dependent variable: Yt

	coefficient	std. error	t-ratio	p-value	
const	-1847.82	1250.45	-1.478	0.1675	
X1	0.0619172	0.0105955	5.844	0.0001	***
X2	3.49044	1.52952	2.282	0.0434	**
X3	-9.11961	2.45887	-3.709	0.0034	***
X4	0.401363	0.0855288	4.693	0.0007	***
X5	39801.1	19108.9	2.083	0.0614	*
Mean dependent var	1365.759	S.D. dependent var	1301.033		
Sum squared resid	280950.0	S.E. of regression	159.8152		
R-squared	0.989626	Adjusted R-squared	0.984911		
F(5, 11)	209.8753	P-value (F)	1.59e-10		
Log-likelihood	-106.6801	Akaike criterion	225.3601		
Schwarz criterion	230.3594	Hannan-Quinn	225.8571		
rho	-0.022808	Durbin-Watson	2.045120		

Figure 11 Data analysis 2 by Gretl

After I omitted x_6 , the new linear regression equation is:

$$y = -1847.82 + 0.06191x_1 + 3.4904x_2 - 9.11961x_3 + 0.40136x_4 + 39801.1x_5 + \varepsilon_1 \quad (\varepsilon: \text{Error term})$$

Economic analysis and test

$0.06191x_1$: For every 10 billion yuan increase in the scale of third-party transactions, e-commerce trading value will increase by 619.1 million yuan. This is an increase influence of 113.2 million yuan per unit over the previous analysis.

$3.4904x_2$: For every 1 million users increase in internet users, e-commerce trading value will increase by 34.904 billion yuan. This is an increase influence of 1.29 billion yuan per unit over the previous analysis.

$-9.11961x_3$: For every 10 billion yuan increase in total social logistics costs, e-commerce trading value will decrease by 91.1961 billion yuan. This is a decrease influence of 4.0998 billion yuan per unit over the previous analysis.

$0.40136x_4$: For every 10 billion yuan increase in total social logistics amounts, e-commerce trading value will increase by 4.0136 billion yuan. This is a decrease influence of 199.8 million yuan per unit over the previous analysis.

$39801.1x_5$: For every 1 unit increase in Logistics cost ratio, e-commerce trading value will increase by 39801.1 billion yuan. This is an increase influence of 385 billion yuan per unit over the previous analysis.

The estimation of the model results shows that when other conditions remain unchanged, the changes of these factors will have a corresponding impact. At the same time, after omitting x_6 , the influence of all independent variables on dependent variables changes, but it is more accurate. From the results, it can be seen that these data are still in line with the economic significance

Statistical analysis and test

First of all, we can see that the P values of x_1 , x_3 and x_4 are still much smaller than alpha (0.05), so they still have strong statistical significance. It is worth noting that after I omitted x_6 , the p value of x_2 has changed from slightly greater than alpha (0.05) to slightly less than alpha (0.05). In other words, the statistical significance of x_2 has changed from the previous weak statistical significance to strong statistical significance. At the same time, the p value of X_5 is only slightly reduced, but it is still greater than alpha (0.05), which still has weak statistical significance.

Then we can see that the square of R is 0.9896, that is, the regression linear model can explain 98.96% of the data, which also indicates that there is a strong relationship between the dependent variable and all independent variables. The F test of P-value is $1.59e-10$, which is clearly less than 0.05, that is, alpha, so this regression linear model has strong statistical significance. At the same time, for this p value, it is also significantly less than the p value obtained in the previous analysis ($2.33e-09$), which can also be understood that the linear regression model obtained after omitting x_6 has stronger statistical significance.

4.7.3. Conclusion of Gretl analysis

Through the above analysis, from 2004 to 2020, I found that the scale of third-party payment, social logistics cost and total social logistics have a strong impact on the e-commerce market, indicating that logistics and third-party payment have an important impact on China's e-commerce market. At the same time, it also means that the future development of the third-party payment platform and logistics industry is also very important to China's e-commerce market. We must ensure the security of the third-party payment platform before we can make a good contribution to China's e-commerce market environment. Of course, the development of the logistics industry is inseparable from the increasing number of logistics companies. In the good and orderly competition, the work efficiency of the logistics industry has been improved. During the analysis, I thought that

the logistics cost ratio, which was very important, was not statistically significant, which was inconsistent with my hypothesis and other relevant literature I read. However, looking at the data I collected (Table 1), the logistics cost ratio decreased rapidly from 2004 to 2010, but the decline slowed down after 2010, indicating that the control level of China's logistics cost was flat after 2010, And it is difficult to break through. China's social logistics cost level has been controlled at a stable stage. It is worth noting that the logistics cost ratio of 2020 has increased, which is due to COVID-19's reason. Under the strict epidemic prevention and control measures in China, the logistics cost ratio has increased, but with the disappearance of COVID-19, the ratio should continue to decline.

Through the adjusted analysis, it is also easy to understand that online users also have an important impact on the transaction value of e-commerce. The increase of Internet users shows the perfection of China's basic information and communication construction. With the development of Internet and electronic technology, the increase of Internet users makes people understand what e-commerce is and how to establish and develop e-commerce. This is the foundation of everything. In the future, Internet users will still have an impact on China's e-commerce, so we should strengthen the construction of basic communication in rural and remote areas and better build and develop the Internet.

5. Conclusion

Overall, China's e-commerce trading value has changed greatly from 930 billion in 2004 to 372.1 billion in 2020 and is growing rapidly every year. The transaction value of China's e-commerce is strongly affected by third-party payment, Internet users, social logistics cost, total social logistics and logistics cost ratio. The scale of third-party payment has increased from 10 billion yuan in 2004 to 27.1 trillion yuan in 2020. Due to the influence of third-party mobile payment and third-party Internet payment, the scale of third-party payment has also increased rapidly, and has a strong impact on the trading value of e-commerce in China. With the construction of China's Internet infrastructure, people's popularity of the Internet has also increased significantly. The number of Internet users has changed from 9.4 million in 2004 to 989 million in 2020. The increase of Internet users is also a decisive factor in the rapid increase of China's e-commerce transaction volume. Although the cost of social logistics increased from 2.9 trillion in 2004 to 149 trillion in 2020, the total amount of social logistics also increased from 380 billion in 2004 to 3001 trillion. At the same time, I also got the social logistics cost ratio. We can clearly understand that the social logistics ratio decreased from 0.076 in 2004 to 0.05 in 2020. With the decline of social logistics cost ratio, it shows that the logistics industry has become faster and cheaper. The e-commerce market is inseparable from the logistics industry. Only by reducing the logistics cost ratio can China's e-commerce develop better and better.

China's e-commerce market has undergone great changes in recent years, which has also changed people's way of life. Not only can people buy anything online, logistics services, food delivery and other intra city distribution services, but also fast and cheap. In the third quarter of 2019, the scale of China's third-party payment transactions was about 56 trillion yuan, with a year-on-year growth rate of 15.2%. Chinese people are gradually coming out with only one mobile phone to meet the functions of payment and social interaction. Even many stores have no change to make change. You can only choose Alipay or WeChat to pay. This is indeed convenient for people's life, but in today's era of information and big data, it is difficult to ensure the security of the third-party payment platform. Any unsafe link may lead to the theft of the social platform account of Wechat, so as to carry out further Wechat wallet theft. With the development of the era of big data, people's personal information has gradually left traces on many platforms. At the same time, there have been

many cases of fraud. The state must strengthen the supervision of network information security and the verification of personal identity information and strengthen citizens' awareness of self-protection. Only in a safe, clean payment and Internet environment can we better develop the e-commerce payment market.

At the same time, the environment of e-commerce live broadcasting has developed rapidly, which not only drives the sales of fruits and vegetables in rural areas, but also increases the income of farmers. In 2020, China's live platform Kwai, Tiktok transaction scale reached 916 billion yuan. In 2020, Taobao live broadcast volume is over 400 billion yuan, and the live broadcast of the short-wave video platform is over 500 billion yuan, and the Kwai (short video platform) live electricity supplier sales about 300 billion yuan. This is due to the strengthening of China's network infrastructure, which has promoted the development of mobile network and popularized social informatization and familiarization. And focus on the network infrastructure construction in remote areas to promote the information development of rural population. At present, China's e-commerce market has ushered in the heat wave of live delivery and short video advertising, which is in an era of "everyone can be an anchor". And there are a large number of online anchor training companies, which also greatly promotes the consumption of online shopping. However, we should also note that the mode of e-commerce live broadcast is mainly the exaggerated description of the anchor and the products under special lights, and the conditions of special price when matching the upper limit. I think most of them have false or exaggerated publicity, coupled with consumers' impulsive consumption psychology, which leads to consumers' irrational ordering. In China, many families have many "unusable" products. I think the live broadcasting platform should strengthen the control of the qualifications of live broadcasting institutions or individuals, as well as the audit of products, and improve the live broadcasting threshold. At the same time, the state should strengthen the ideological education of rational consumption, so that people can learn to distinguish right from wrong and spend reasonably.

After experiencing rapid development, China's e-commerce market is now in a situation where "all flowers are blooming together". There are more and more enterprises related to the e-commerce market, and the competition is becoming more and more fierce, but at the same time, there are more and more false shopping and fraud cases on the Internet. To be

exact, the development of e-commerce in China makes Chinese people inseparable from smart phones and online shopping. This is also a big blow to the offline retail industry. Therefore, how to control the safety of online shopping and promote the development of offline trade is a problem that the Chinese government needs to overcome and face. However, at present, the Chinese government is strictly controlling and issuing various policies. With the strengthening of supervision and the strict control of major platforms, China's e-commerce market will be more prosperous and safer.

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