

A Study of the Impact of China's Internet Economy on the Agricultural Industry

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Abstract. In recent years, China has faced the challenge of economic transformation and the triple pressure of contracting demand, supply shocks and weakening expectations. In the past, China's economic growth was mainly driven by trade and investment. Nevertheless, the share of consumption in the economy has been increasing, becoming one of the most critical factors in China's economic development. The rapid development of Internet technology has promoted online consumption, thus providing a good opportunity and a platform for selling agricultural products online in remote areas. This paper focuses on the impact of the development of China's Internet economy on the agricultural industry. It is found that the development of China's Internet economy has a positive impact on the development of the agricultural industry and the sale of agricultural products. Whether in the pre-epidemic, epidemic, or post-epidemic period, online sales of agricultural products show a continuous growth trend. This paper also presents the problems of selling agricultural products online and provides reasonable solutions.

Keywords: Agricultural products; online consumption; online shopping; Internet Economy; China.

1. Introduction

1.1. Background

In recent years, China has faced the challenge of economic transformation and the triple pressure of demand contraction, supply shock and weakening expectations. In the context of slowing economic growth, maintaining steady economic growth has become a complicated issue in China's current development. In the past, China's economic growth was mainly driven by trade and investment. In recent years, the proportion of consumption in the economy has increased, becoming one of the most important factors in the development of China's economy. With the development of the Internet, the importance of online consumption is deepening daily. With digital technology as the core productivity, the digital economy has penetrated every field of human society. It has become a new economic form after the agricultural and industrial economies, fundamentally changing the global economic environment and economic model. The digital economy has become the key to China's primary strategic deployment. And it is obvious that online consumption has boosted the development of remote areas. Commodity live broadcast has the characteristics of non-contact, authenticity, visibility, interaction, timeliness, and so on to help people living in remote areas get rid of poverty. With the help of electronic products, farmers in poor areas can easily live, become anchors of "live with goods", promote various agricultural products, expand agricultural product sales channels, and increase income.

1.2. Related research

Qu and Chen analysed and expounded on the definition, characteristics, classification, and factors affecting the development of e-commerce and the influence mechanism of e-commerce development on national economic growth. By using charts and data analysis over the years, it is concluded that there is a significant positive correlation between five important e-commerce factors and GDP. By analysing the advantages and disadvantages of e-commerce, the paper proposes a suitable way for China to develop e-commerce [1]. Javadi et al. analyzed the factors affecting online shopping behaviour. Applied research and descriptive surveys are used to collect data in questionnaires, and test hypotheses are used to analyse the factors affecting consumers' online shopping. Models are used

to explore domain innovation, risk prediction, infrastructure variables, ease of returns, and store compliance. The authors found that financial and non-delivery risks were inversely correlated with online consumption, while new product innovation and store compliance positively correlated with online shopping success [2]. Yang uses a combination of theory and empirical analysis to explore the perceived value and its impact on online consumers' purchasing behaviour under the influence of the external environment of the novel coronavirus outbreak, proposes reasonable hypotheses on this basis, and empirically tests the hypotheses. The analysis concludes that the changes in the political, economic, social, and technological environment have a significant positive correlation with consumers' online shopping and reasonable suggestions are put forward for online merchants and other related enterprises based on the analysis results [3].

Gwo-Guang and Hsiu-Fen used data from a survey of 297 online consumers to test the reliability of the research model. The research model mainly explores the relationship between service quality, customer preference and purchase intention. Finally, the author's survey results show that the degree of website creativity, security, responsiveness, and whether consumers trust the website are related to service quality and customer recognition. However, the impact of the personalisation dimension on service quality and customer recognition is not apparent [4]. Cho investigates the assessment, attitude, and behavioural factors that increase or decrease the likelihood of a purchaser rejecting an online transaction. Through analysis, the author concludes that consumers' risk prediction of online transactions directly and positively impacts the likelihood of successful transactions. In addition, consumers have specific online shopping experiences, and online transactions from merchants who have purchased products before and are satisfied with them have a small probability of being cancelled. At the same time, other factors also affect the possibility of online trading [5]. Xia and Wu studied the need for more and incompleteness of laws and rectification of college students' online instalment shopping. Due to the incompleteness of the law, most college students do not control online shopping by instalment, and the social level ignores the severity of this phenomenon. Using data analysis, the author studies the legal deficiencies of online instalment payments and gives suggestions to improve the legal system [6].

Xu explained the characteristics of online consumption, consumer demand and behaviour in the online consumption period. The features of online consumption are mainly different transaction environments and give consumers enough private space; simultaneously, online shopping is more direct, flexible, and convenient. Consumer demand and behavioural characteristics in online consumption include individuation, immediacy and diversification of consumer demand, and individuation, rationalisation, informatisation and participation of consumer behaviour [7]. Zhang et al. Studied online consumer behaviour in China and the United States and found their similarities and differences. iResearch data was used for analysis. The author selects eight macro and micro influencing factors for analysis and comparison, and the results show significant differences between China and the United States in culture, law, income and education, and even the differences and even the same differences in other aspects such as psychology [8].

Hasan's research focuses on the differences between male and female students' attitudes toward online shopping. This study investigated 80 students majoring in business at the university, taking attitude as a multidimensional concept including cognitive, emotional and behavioural components, and examined the gender differences in the three attitude components. Finally, the author concludes that the most significant gender difference is cognitive attitude; girls and boys do not attach more importance to the function of online shopping [9]. Wang mainly explores the impact of the economic development of e-commerce on rural residents' income. The authors use a systematic GMM estimation method to empirically test the impact of e-commerce economic development on rural residents' income and different income sources. Finally, the author found that the development of an e-commerce economy has a significant role in promoting the income of rural residents. However, each region should identify the development direction of the local e-commerce and maximise the economic income of the e-commerce [10].

1.3. Objective

This paper will study the impact of the development of China's Internet economy on the agricultural industry. The second part focuses on the current online sales of agricultural products. The third part of the paper explores the causes of the problems and solutions to the problems arising from the online sale of agricultural products.

2. Status of online sales of agricultural products

2.1. Development situation

In 2019, the growth rate of the agricultural e-commerce market slowed down, and a large number of enterprises closed down due to long-term losses and financing difficulties, and the industry suffered a "cold winter". 2020, the new crown epidemic not only caused the number of orders on e-commerce platforms to soar, but also generated more personalised consumer requirements, which contributed to the rapid and diverse development of the agricultural e-commerce industry, as shown in Fig. 1. Data show that the epidemic has little impact on supermarket consumption, fresh food e-commerce, community food shops and community group purchasing consumption surge, agricultural products e-commerce industry "blowout" type of development, while the increase in the e-commerce platform mainly from the consumption of farmers' market consumption declined significantly. With the increase in the number of digital food markets, the epidemic led to changes in shopping, changes in the types of online shopping and the rapid development of fresh food e-commerce have brought great impetus to the development of agricultural product logistics, in which the high-quality development of agricultural product cold-chain logistics has become a new requirement for the development of agricultural product logistics in the post-epidemic era. 2020, the online demand for all types of fresh food products has grown significantly, especially the demand for fruits, vegetables and aquatic products that require cold-chain transport. The demand for fruits and vegetables and aquatic products will grow at a high percentage of 49.90% and 28.70% [11]. As a key link in securing market supply and improving the efficiency of agricultural products circulation, the agricultural products cold chain logistics industry needs to focus on the long-term development of circulation infrastructure, green, efficient and low-carbon cold storage facilities equipped with cold storage facilities and cold chain service capacity of the main channels of circulation. China's agricultural products online sales amounted to RMB 422.1 billion in 2021, a year-on-year increase of 2.8 per cent, accounting for 20.6 per cent of the rural online sales [12]. Similarly, China's agricultural product e-tailing increased better in 2022, with national agricultural product e-tailing sales of 531.38 billion yuan, an increase of 9.2 per cent year-on-year, and a growth rate of 6.4 percentage points higher than that of 2021 [13]. Business Big Data shows that in 2022, the national rural e-tailing turnover reached 2.17 trillion yuan, up 3.6 per cent year-on-year. Among them, rural online retail sales of physical goods amounted to 1.99 trillion yuan, up 4.9 per cent year-on-year [14].

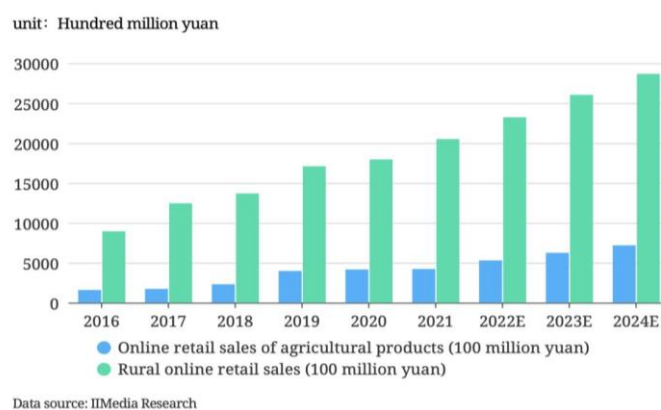


Fig 1. China's rural online retail sales and agricultural products online retail sales and forecast in 2016-2024.

2.2. Chinese agricultural consumption pattern

Agricultural products e-commerce refers to the Internet open network environment, buyers and sellers of agricultural products based on the browser or server application of the commercial and trade activities. It is the product of Internet technology to change the distribution channels of agricultural products, which is a new type of business model. China's traditional agricultural products circulation sales process (from agricultural products output to consumption), usually through agricultural brokers, wholesalers, retail terminals and other multi-layer intermediate links, has the problem of poor information circulation, circulation costs are too high, the emergence of the Internet, it is to improve the drawbacks, and agricultural products circulation channels into a network-like, and then derive five different agricultural products e-commerce model: C2B/C2F mode, O2O mode, B2B mode and B2C mode (divided into platform-type B2C and vertical B2C two kinds), F2C mode, as shown in Fig. 2.

(a) C2B/C2F mode, i.e. consumer customised mode, which is a mode in which farmers produce agricultural products according to the members' order demand and then distribute the products from their own farms to the members through family home delivery. The operation process of this model is divided into four steps: the first step, farmers to form a large-scale planting and raising; the second step, farmers to publish product supply information through the network platform to recruit members; the third step, members through the online membership system in advance to book the future needs of the product; and finally, when the product is produced, the farmer in accordance with the predetermined needs of the distribution to the members.

(b) B2C mode, i.e., business-to-consumer mode, which is the behaviour of brokers, wholesalers and retailers selling agricultural products to consumers through online platforms or professional vertical e-commerce companies purchasing directly from farmers and then selling to consumers. This type of model is the current mainstream model, which can be subdivided into two forms of operation: a platform-type B2C model, such as Tmall, Jingdong, Taobao; a vertical B2C model (i.e., focusing on selling agricultural products e-commerce model), such as Shunfeng Preferred, BenLife and so on.

(c) The B2B model, i.e. the business-to-business model, which is the behaviour of businessmen who go to farmers or primary wholesale markets to purchase agricultural products centrally and then distribute them to small and medium-sized agricultural product dealers. This type of model mainly facilitates small and medium-sized agricultural product wholesalers or retailers and saves their procurement and transport costs.

(d) The F2C model, also known as the farm-to-consumer model, is the behaviour of agricultural products being sold directly from farmers to consumers via an online platform.

(e) The O2O model refers To Online to Offline. Online purchase drives offline operation and offline consumption. O2O pushes the news of offline stores to Internet users utilizing discounts, information provision, and service booking, thus attracting consumers to transact online.

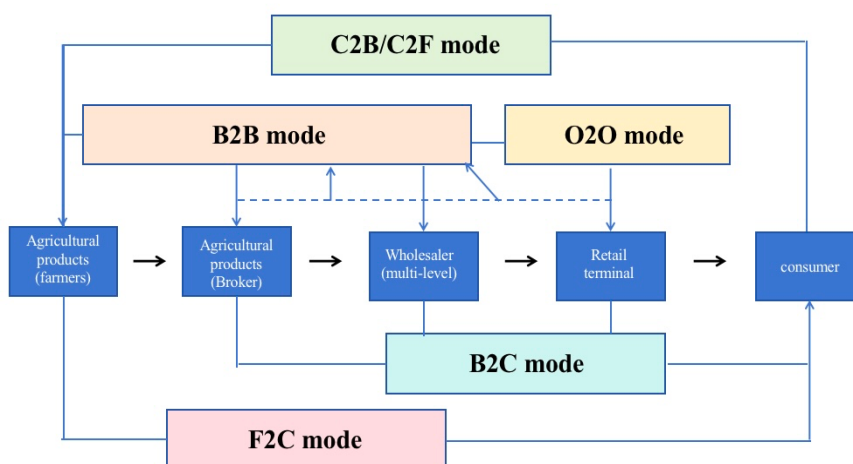


Fig 2. Agricultural products e-commerce to improve the circulation channel.

2.3. Company layout

Major enterprises have also launched e-commerce to help farmers plan. Alibaba 2020 On February 6, 2020, will start a comprehensive "Love to Help Farmers" plan, opened the "Love to help farmers line" to collect information on slow-selling agricultural products, in Taobao launched a series of agricultural products on sale special area, increase the agricultural products Green logistics line investment efforts to reduce the cost of agricultural products on the platform, to help agriculture-related merchants to open Taobao live for free, Jushu joint major celebrities to carry out the plan to help farmers; Pinduoduo on February 10 on-line "anti-epidemic agricultural goods" zone, to help impoverished areas and part of the agricultural area to solve the problem of agricultural products in special periods of slow-moving; Tencent Microvision launched the "micro love to help farmers" plan 500 million flow to help three agricultural products sales. In addition, the "China Short Video Market research report in the third quarter of 2019" shows that Jitterbug ranked first in 2019 with a monthly short video volume and a daily short video volume of 354,813,000 and 186,573,000, respectively. In terms of usage rate, users have the highest frequent usage rate of 83.4 per cent [15]. Many rural users record and upload their hometown's local agricultural products, natural scenery, and mountain villages through short video platforms such as Jieyin so that many users of short video platforms can learn about and understand the development of many impoverished areas they have never been to through videos. They can also directly buy local agricultural products through the links on the pages of the Jieyin short video platform. This watch-and-buy model promotes social e-commerce and enables farmers to help alleviate their poverty, as shown in Table 1.

Table 1. Famous bloggers who live in mountains on the Tiktok and the quantity of their sales.

Ranking	Tiktok Account	Zones	Number of fans	Average share volume	Sales volume (10,000 orders)
1	Chuan Xiang Qiu Yue	Luzhou, Sichuan	900.2w	1500	10+
2	Earthy scent	Kaifeng, Henan Province	315.6w	50	9.8
3	Xiao Hong is in the countryside	Sichuan, panzhihua	289.6w	100	3.0
4	Rustic girl	Hangzhou, Zhejiang	277.1w	100	3.3
5	July in the fields	Liaocheng, Shandong	245.3w	1500	2.2
6	The secret honey of the mountains	Hengzhang Village, Songyang County, Lishui City, Zhejiang Province	241.2w	4000+	22.5
7	Xiaoxian Yu	Guangdong	424.2w	2000+	100

3. Problem cause and solution strategy

3.1. Efficiency problems, damaged goods

For fruits and vegetables and meat and other fresh agricultural products in the logistics and transport process, consumers can often see product damage deterioration, especially in the inter-regional transport and anti-seasonal transport and sales process, the need for fresh agricultural products for the insurance transport and storage, through the cold chain logistics technology to ensure the quality and health of fresh agricultural products. The transport efficiency of China's fresh food e-commerce could be higher, and the transport quality of fresh agricultural products cannot be guaranteed, coupled with the relatively low concentration of the industry, which has not formed a perfect integrated cold chain logistics system. According to statistics, the spoilage rates of fruits and vegetables, meat and aquatic products in China are 25 per cent, 12 per cent and 15 per cent, respectively [16]. It is recommended to strengthen the packaging and cooperation between express delivery services to save transport time and increase efficiency.

3.2. Over-reliance on large Internet platforms

The over-dependence of agricultural enterprises on large-scale Internet platforms mainly refers to the fact that after agricultural merchants' station on large-scale platforms, their marketing activities are subject to various restrictions of the large-scale platforms while taking advantage of their benefits. The first reason is the limitations of the agricultural businesspeople's skills, such as poor network skills or awareness and thus the need for external guidance and help. The second reason is that large shopping platforms want to maximise the rural market development and turn farmers into consumers rather than helping agricultural products achieve online transformation. In order to solve this problem, agricultural alliances can be carried out between various regions or towns, and agricultural products with local comparative advantages can mainly be planted. This method can increase production efficiency, making the operator's management more accessible.

3.3. Information asymmetry

First of all, the information is not timely due to the relatively small elasticity of the harvest time of fruits and vegetables; consumers often do not know the time of fresh fruits and vegetables on the shelves, so they cannot buy fresh, high-quality fruits and vegetables, thus resulting in an unsatisfactory consumer experience, and is not conducive to the sale of online agricultural products. This problem can be solved through the United States Community Supported Agriculture (CSA). This model can continue to be widely used to provide a platform to help consumers directly to small farmers to order organic agricultural products and the same day delivery to ensure freshness. The second point needs to be more accurate information. Consumers do not know much about agricultural products and often misunderstand specific products because of rumours that GM foods are toxic, causing farmers to suffer economic losses and affecting online and offline sales of agricultural products. The solution is to increase the popularisation of science in the media while giving more voice to farmers and agricultural experts to reduce the spread of rumours.

4. Conclusion

This paper finds that the development of China's connected economy has positively impacted the development of the agricultural industry and the sale of agricultural products. In the pre-epidemic, epidemic, and post-epidemic periods, online sales of agricultural products showed an annual growth trend. At the same time, large corporations launched e-commerce to help farmers plan and start selling their agricultural products. Subsequently, five different modes of selling agricultural products were identified, namely, C2B/C2F mode, O2O mode, B2B mode and B2C mode and F2C mode, and the problems of efficiency, loss of goods, reliance on Internet platforms, and information asymmetry in the process of selling agricultural products online can be solved through the cooperation of courier services, agricultural alliances, and the dissemination of science through the media.

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