

## **Research on the Influence of E-commerce Platform to Agricultural Logistics: An Empirical Analysis based on Agricultural Product Marketing**

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### **Abstract**

*Along with the rapid development of information technology, the traditional agricultural products sales model is facing a huge challenge. Agricultural products E-commerce platform, which carries three layers service functions, one is its most basic functions, which provides an information exchange, online payment, logistics transportation and sales activity; second is intermediate function, it can provide financial analysis, market research and business plan; the final advanced features, it strongly promoted the related subsidiary industry and service industry. In this paper, we make empirical analysis about the factors that influence the agricultural logistics economy, the result shows that agricultural prices, logistics time, product quality, service level, credibility, spending habits, profits and operating capital are the key factors that will affect the agricultural product marketing.*

**Keywords:** *E-commerce; Agricultural logistics; Economic development; Regression model*

### **1. Introduction**

China's economy in the globalization and network of environment facing opportunities and challenges, the electronic commerce to the characteristics of the high efficiency and low cost become global enterprises to enhance competitive power important means that people pay attention to the electronic commerce on the rise, countries to increase the intensity of the focused on agriculture[1]. The effective tool for promoting the circulation of agricultural products is more and more attention by the state. The e-commerce of agricultural products is on the basis of industrial products of electronic commerce in recent years began to large-scale development[2]. Due to the special properties of agricultural products taste unique and storage of perishable corruption and consumption of fresh activity, different regions, different types of agricultural products with different consumer groups, storage and transportation requirements, in terms of management and economic factors mainly differ in the efficiency of agricultural products circulation and circulation cost, in terms of information factors mainly displays in the exchange of agricultural products supply and demand information accuracy and timeliness requirements vary, its comprehensive performance on the differences of agricultural products e-commerce operation mode.

China in 2014, the information society index is in the transition stage of the industrial society to the information society. At present, Beijing, Shanghai and other 17 cities in China have taken the lead in the initial stage of the information society[3]. China strategy has become an important support to enter the information society. Information consumption has become an important force in stimulating domestic demand, the current development of China's information industry is good, but the growth rate is slow, the

reason is that the main industry is closely related to the information industry, the information industry is a service industry, must be built on the basis of other industries or resources to get better development, so its development must be closely integrated with other strategic industries such as agriculture, logistics. At present, the development of agricultural informatization is still in the primary stage, the development of agricultural modernization in China is constantly trying, information service in agricultural production and operation is not enough, need to continue to promote agriculture and agricultural products circulation industry and information industry closely integrated, agricultural e-commerce and agricultural and agricultural development is the combination of information industry and agricultural development. The breakthrough of the common development of agriculture and information industry is the agricultural informatization. Currently, online shopping has become the norm, fresh agricultural products online shopping in the country gradually spread. The role and advantages of e-commerce has been government, business and consumer recognition, with the promotion of information industry development policies and local government to promote e-commerce development initiatives and business e-commerce applications, e-commerce in the agricultural development has been better promotion and application, especially in agricultural products circulation has played a positive role in agricultural products, has emerged a large number of enterprises and individuals engaged in agricultural e-commerce operations and services, the country's major e-commerce service platform has been built on a series of agricultural products, agricultural e-commerce transactions continue to upgrade. In addition to the development of cold chain network related to agricultural products circulation, fresh agricultural products trading market has become increasingly active, has emerged in a number of e-commerce enterprises and agricultural products sold in the electricity business model they used in order to meet the requirements of the current economic and social development in China. The electronic commerce has played an increasingly strong role in boosting the circulation of agricultural products and agricultural development.

## **2. Literature Review**

### **2.1. Agricultural E-commerce**

In the field of agricultural product electronic commerce, some foreign scholars have done some basic research on the characteristics of agricultural products, the utility and the trade body. Djelassi (2013) believes that the development of agricultural e-commerce can promote the flow of information, facilitate industry coordination, and improve market transparency and price discovery [4]. The United States, Japan, Canada and other major developed countries in the early start of agricultural e-commerce, and each country for agricultural e-commerce development are quite seriously, although each country is different, but basically set up a relatively perfect, practical and effective information system, from the source of agricultural production, sales link supervision, as well as quality and safety management and traceability system has formed an effective model to protect the interests of consumers, safeguard consumer rights. The research and exploration of agricultural e-commerce is only a vague concept in our country, and it is only a vague concept. With the development of information era, agricultural e-commerce has become the focus of agricultural e-commerce, and more advanced the reform and development of agricultural products circulation. Wen (2007) pointed out that the research of agricultural products e-commerce mainly focused on the basic research [5], development strategy, operation mode and comparison of agricultural products, agricultural products supply chain, agricultural products logistics and so on. Helander (2000) pointed out inductive electronic commerce of agricultural products transaction costs as transaction costs, distribution costs, transaction costs of contracting [6],

transaction monitoring costs four, from the perspective of institutional economics analysis the application value of agricultural products, agricultural e-commerce applications, not only can the sales pattern change and adjust the market structure of agricultural products through the market to adjust the price, improve the competitive advantage of agricultural products, from the demand side to pull the traditional agriculture to the modern agriculture transformation process[7]. The definition of electronic commerce at home and abroad, different countries in different fields of different experts have given different definitions, integrated domestic and international perspectives, the broad sense of electronic commerce refers to the use of electronic means of a trade situation, including traditional cable, telephone business transactions. The narrow sense of electronic commerce refers to enterprises, governments, banks, consumers such as business activity needs and business activities of the economic entities in order to cross the time and space to improve business efficiency and through the use of a variety of digital media technology to achieve a successful trading of goods or services.

## **2.2 E –commerce Platform for Agricultural Products**

Agricultural products electronic commerce belongs to the category of electronic commerce. It is a kind of electronic commerce way which is carried out by the business or the main body of the service which is related to the agricultural products and the agricultural products [8]. E-commerce platform for agricultural products refers to the electronic commerce website which relies on the network platform, provides the relevant knowledge of agricultural products, agricultural policies and related agricultural products market information and provides agricultural products trading services [9]. Obtain an electronic commerce system platform, including its own development, outsourcing, development cooperation, and leasing virtual host service platform, different ways have different advantages and disadvantages and technical staff and funding requirements are different, in general, for most number of agricultural products operators for hire third-party business open platform to build on the platform of the points of their own. In this way, not only can reduce the build platform of technical difficulty and safety management of risk, but also by the platform has increased sales flow.

Fresh agricultural products e-commerce is fresh agricultural products business, circulation, trade and other processes of electronic commerce operation mode of trade. Engaged in fresh agricultural products, electronic commerce trade entities referred to fresh electricity suppliers. Fresh and more for the daily necessities of daily life with strong user stickiness, user loyalty once the purchase rate will be very high. The regional distribution of agricultural products is characterized by the distribution of agricultural products, which can be formed[10], and the agricultural products can better grasp business opportunities, and the agricultural products logistics network coverage should be high enough, and the logistics efficiency should be high enough. Through the electronic commerce can expand the industry market domain and range, easy to seek the industry related supply and demand information from a wider range of fields, quickly and efficiently realize the agricultural products online delivery and logistics and other trading links [11]. The seasonal decision of agricultural products is not timely adjustment of agricultural products and product categories and the number of products, which exist in the operation of fixed investment risk. In mature season of agricultural products, agricultural products accumulation under unsalable risk, how in a short period of time to complete a large number of agricultural products and sales, through the agricultural product electronic commerce mode of the order and buy mode can be very good to solve the agricultural production of seasonal caused the problem of poor sales of agricultural products. Part of the seasonal characteristics of fresh agricultural products, the seasonal characteristics of their consumption, through the agricultural e-commerce platform can be released in advance of the time to sell agricultural products, to remind consumers to buy on schedule.

### **3. Agricultural Product Electronic Commerce Model**

#### **3.1. Development Status of Agricultural E-commerce**

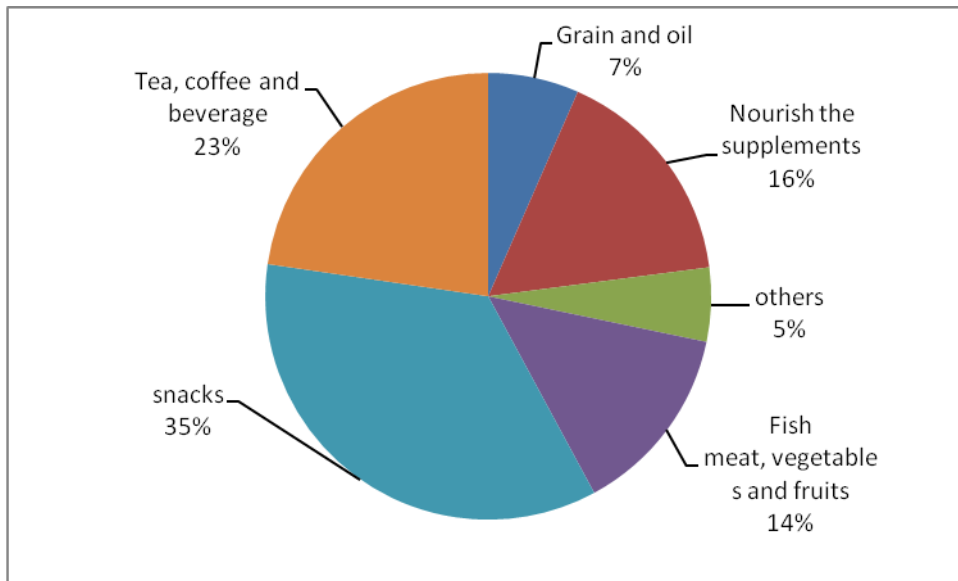
The regional distribution of agricultural products consumption is determined according to the amount of expenditure to buy agricultural products according to different regions, so the regional distribution of agricultural products can also be used to represent the distribution of agricultural products. According to the data from the Research Institute of Ali, the distribution of agricultural products and agricultural products consumption area basically coincide, which shows that the consumption of agricultural products has the characteristics of local, especially fresh agricultural products, by distance and cost and quality assurance and other factors, compared with the short range of distribution and localization consumption. In addition, the electricity supplier of fresh agricultural products is also affected by the capital market. The regional distribution of agricultural products is not uniform, according to the distribution and growth of agricultural products in China. The distribution of agricultural products in the whole country is consistent with the level of economic development, and the distribution density of agricultural products in the developed regions is higher. The level of economic development determines people's consumption ideas and income level, income level and consumption concept, the combination of consumer behavior, the eastern coastal areas of economic development, people's consumption concept is more advanced, willing to pay high prices for health, buy relatively safe and green food, and agricultural products, and the central and western regions due to the impact of distance, freight and the concept of low density of agricultural products. From the overall situation, to remove the natural growth and distribution of agricultural products the objective reason, the level of economic development for agricultural products consumption in the region has played a decisive role.

Logistics developed cities, the scale of agricultural products cold chain to reduce the cost of the formation of agricultural products prices lower, even more than the traditional supermarket or traditional food market prices even lower, thereby attracting a large number of low-income users online shopping, and in the three or four tier cities due to the cold chain logistics network coverage is small, cold chain logistics costs rise, and then cause the price of agricultural products or logistics costs rise, in these local consumers are mostly high income crowd. In the rural township, cold chain logistics almost cannot be covered, where users cannot online procurement, if not the logistics market to be guided, in the short term may leads to a vicious cycle of network consumption of agricultural products polarized, will also lead to the logistics market in the hair of the intensification of competition in the City, and in the less developed regions of deletion. With the international development of the electricity market, domestic and foreign well-known agricultural products have gradually been introduced into the domestic market, the cost of these products is relatively high, generally suitable for high-end consumer groups online shopping consumption. But with the development of the Internet of things, these domestic and foreign well-known products will be more popular consumption.

#### **3.2 E-commerce Market Size of Agricultural Products**

Due to the electronic commerce of agricultural products is just emerging, major network operators in business platform has just begun attempts to sales of agricultural products, so on agricultural products e-commerce market transaction data acquisition is difficult. This paper focuses on the operation of electronic commerce of agricultural products in more mature, market of large scale of alibaba group data scale of agricultural products e-commerce transactions data as the basis to study. Because of the small scale of the electronic commerce and the low market share of the agricultural products, this paper mainly selects the agricultural products trade scale and the comprehensive market share of

the electricity suppliers as a rough calculation of the scale of the electronic commerce market. Logistics conditions require less snacking nut products category is taobao platform to the largest agricultural products sales categories, effects of visible logistics level of electricity sales of agricultural products greatly, such as shown in Figure 1.



**Figure 1. Agricultural Products Distribution**

### 3.3 Problems in the Circulation Market of Agricultural Products

China's agricultural products logistics market is different from the traditional logistics market, which is in the initial stage of development, and the development of agricultural products, which is in the growing stage, is not coordinated. These problems are related to the traditional logistics market and the characteristics of agricultural products themselves. Agricultural products in general at least after four transport links to reach consumers, and each link increase of not less than 20%, coupled with the traditional agricultural product line circulation channel link complex, making the cost of circulation have been extremely difficult. The use of information technology in the field of agricultural products logistics can play a role in reducing the efficiency of the information technology and promoting decision-making. The operation of the system needs special client equipment and lack of awareness of environmental protection. Not only high cost, but also not strong, it is not suitable for large areas of the country to promote. So from the management, the concept of agricultural products logistics management in our country is advanced, but from the technical application and promotion, our country's agricultural product logistics field concept lags behind, the overall development is not balanced. China's agricultural products circulation process is not standardized mainly reflected in the agricultural products circulation enterprise management and the operation of agricultural product market is not standardized, and our country's agricultural products circulation industry's supervision is not in place and the level of agricultural products circulation enterprise is not homogeneous. Because of the lack of capital and management level of agricultural products circulation enterprises, the government is still in the primary stage of the whole logistics industry. Makes its industry standard lack of standardization is not enough.

## 4. Empirical analysis

### 4.1 Index Selection

Consumer experience affect the agricultural product electronic commerce mode choice: good agricultural products e-commerce model of consumer experience not necessarily poor, instead only the consumer experience good agricultural product electronic commerce mode is can withstand the test of the model, and the consumer experience and agricultural product price, quality, service, credit, logistics waiting time, consumption habits and other effects. These factors have become the factors that affect the consumer experience of the potential factors of the choice of electricity suppliers in agricultural products. The satisfaction of the cooperative partners influences the choice of the electronic commerce mode of agricultural products: good business model, the business chain partners should be more satisfied, and the profit level, risk and profit margin, and the high level of operational capital and professional characteristics become the key factors that affect the partner. The main factor that affects the electronic commerce mode of agricultural products is the main factor of the electronic business platform. The different electronic business models are different. The content of the platform, the standard of technical quality and the degree of operation, the level of the technology and the conversion rate are the main performance of the business platform. The individual indicators are shown in table 1.

**Table 1. Variable definition**

	External variables	Endogenous variables
Latent variable	$\xi_1$ Consumer experience $\xi_2$ Satisfaction of partners	$\eta_1$ Electronic platform $\eta_2$ Degree of cooperation $\eta_3$ Marketing subject
Observation variable	X1 Agricultural prices X2 Logistics time X3 product quality X4 service level X5 credibility X6 Spending habits X7 profits X8 Operating capital	Y1 Website design Y2 E-business platform Y3 operation Y4 Technical level Y5 Distribution efficiency Y6 Cooperation Y7 Store Y8 Information transmission Y9 Marketing costs Y10 Production cycle Y11 Product features Y12 Brand

### 4.2 Reliability and Validity Analysis

The data was collected in March to December 2014, by using e-mail in Harbin city for agricultural products e-commerce enterprises and agricultural operation organization, a total of 1000 copies of the questionnaire, 896 copies of questionnaires, effective questionnaire 792. We use software to analyze the reliability and validity of the survey data, the results are shown in Table 2. According to table 2, the reliability coefficient of the Bach is more than 0.8, and the reliability analysis is very good. Then we carry out the validity analysis. The results are shown in Table 3. The results show that the value of Kaiser-Meyer-Olkin is 0.803, and the validity of the factor analysis is good. Factor analysis,  $P=0.00$ , the correlation coefficient matrix of the factor matrix, can extract the least factor and can explain most of the variance, its validity is good.

**Table 2. Reliability Statistics**

Cronbach's Alpha	N of items
.872	30

**Table 3. The Result of KMO Statistical Test**

Kaiser-Meyer-Olkin		0.803
Bartlett test	Approximate chi-square	119.045
	df	18
	Sig.	0.000

### 4.3 Fitting Degree Analysis

According to the statistical results of the questionnaire survey, the data analysis and processing, and found that the fitting degree is not very good, after the original hypothesis model for many local adjustments, the modified structure of the model results are shown in table 4. The United States social statistician camillis and Mark Evil that chi square value and degree of freedom than between 2:1 and 3:1 can be accepted. The model can be accepted; also the p value = 0.00, can be accepted.

**Table 4. Analysis of the Model Fitting**

Indicators	DF	$\chi^2$	P	NFI	CFI	IFI	GFI	AGFI	RMR	RMSEA
Parameter values	316	650.58	0.000	0.858	0.901	0.881	0.877	0.877	0.026	0.076

### 4.4 Regression Analysis

On this basis, we carry out regression analysis of the model; the results are shown in table 5. Because the sample number is small, the confidence interval of the selected value is significant, and the absolute value of the critical ratio is higher than that of the standard. All the marks are the express by inspection. Table 6 includes a non standard estimate of each load, the standard deviation, the critical ratio, the ratio of the estimated value divided by the standard deviation, and the value of the significance of the value of the. Because the sample number is small, the individual data in the table are close to the basic normal. If the sample is sufficient, the numerical value is larger than that of the latent variable of the structural equation. This table does not exist, but it is close to the cause of the poor interpretation of the structural equation due to insufficient sample size. Through the above analysis, we sum up the factors which can measure the electronic commerce choice of agricultural products: the ease of operation, the convenience, the cost of marketing, the cost of marketing, the characteristics of agricultural products, the level of profits, enterprise credit, and the main factors are: consumer experience, cooperation degree, satisfaction with the main body of agricultural products, and the satisfaction degree of agricultural products.

**Table 5 .Regression Weight**

	Estimate	S.E.	C.R.	P
$\eta_3 \leftarrow \xi_2$	.551	.197	2.789	***
$\eta_3 \leftarrow \xi_1$	.482	.204	2.364	***
$\eta_2 \leftarrow \xi_2$	.431	.201	2.107	***
$\eta_2 \leftarrow \xi_1$	.879	.229	3.912	***
$\eta_1 \leftarrow \xi_2$	.539	.198	2.722	***
$\eta_1 \leftarrow \xi_1$	.646	.271	2.384	***
$y_6 \leftarrow \eta_2$	.258	.135	1.961	***

y7<--η2	.953	.255	3.736	***
y9<--η2	1.000			
y11<--η3	1.059	.238	4.447	***
y12<--η3	1.817	.900	2.019	***
y10<--η3	.482	.414	1.963	***
y4<--η1	.537	.780	1.644	***
y3<--η1	2.588	1.230	2.174	***
y2<--η1	.879	.405	2.159	***
y1<--η1	.970	.390	2.485	***

**Table 6 .Standardized Regression Weight**

model	Estimate	model	Estimate
η3<--ξ2	.551	y9<--η2	1.000
η3<--ξ1	.482	y11<--η3	1.059
η2<--ξ2	.431	y12<--η3	1.817
η2<--ξ1	.879	y10<--η3	.482
η1<--ξ2	.539	y4<--η1	.578
η1<--ξ1	.646	y3<--η1	2.588
y6<--η2	.258	y2<--η1	.879
y7<--η2	.953	y1<--η1	.970

## 5. Conclusion

The electronic commerce of agricultural products in our country has already had several decades of development, which has created a lot of economic value, but also made a lot of basic theory and practical experience of the accumulation of. This paper analyzes the current situation and the development of agricultural products in China, and analyzes the current situation of agricultural products in China. Cooperation and win-win is the road of the development of modern enterprises, and how friendly and efficient cooperation is an important issue, the agricultural products business enterprise choice of e-commerce model must be fully considered the needs of collaboration and win-win, from the macro level to consider the consumer experience, the flow of the main body of cooperation, the main performance of the business platform. In particular, the impact of the degree of cooperation and the satisfaction of partners on the electricity business model of agricultural products is particularly important. According to the aforementioned research, corporate reputation and quality of consumer experience in the consumer experience is king today, any e-commerce model must seriously do a good consumer experience, in particular attention to corporate reputation and agricultural product quality for electricity suppliers mode choice, in the corporate reputation is not very good, agricultural electricity suppliers design mode can be appropriate to enhance their credibility with the credibility of the government. Any agricultural product business model must protect the profit level of the partners, so that they are involved in a profit, while taking full account of the risks and profits, so that partners are satisfied, improve their participation in the operation of agricultural products.

### 5.1 Strengthen the Cultivation of Agricultural Products E-commerce

The transformation of the agricultural informationization indicates the transformation of the mode of agricultural production, and the development of the agricultural industrialization is to depend on the agricultural informationization and the promotion.



First of all, under the conditions of the local, pilot computer basic education, increase the popularity of computer knowledge in rural areas, to form a complete set of teaching system, expand the scope of training students, and enhance teaching quality; not just rely on traditional university education, to actively encourage all forms of social forces, engaged in school and vocational training, in the major companies through regular training and distance education and other ways to establish training system. The government must formulate a series of relevant incentive policies, take effective measures, establish the city to promote the rural areas, expand the city school teachers and professional people in the countryside, increase the rural education, increase the input power of rural culture, enrich the most advanced rural information technology teaching content, cultivate high quality rural information talents.

### **5.2 Establish Agricultural E-commerce Service System**

In recent years, the rapid growth of financial support for agriculture, especially in the science and technology agriculture, information agriculture, this growth rate is far from meeting the pace of agricultural modernization. Actively guide private enterprises to join the rural construction are an effective way to solve the current shortage of funds. Mobilize and guide the whole society to participate in the new rural construction, especially the mobilization of social responsibility of enterprises and institutions of higher learning to provide financial and technical services for the new rural construction. A group of agricultural leading enterprises through the industrialization of agricultural information, and promote the establishment of the network marketing model of their respective enterprises, driven by local agricultural development and farmers become rich. In this one has a large number of listing Corporation, have their own independent network sales platform, many private enterprises, creating an independent business network platform, special open various fields of agricultural products feature website. Private enterprises in the maximum play its flexibility, innovation and other characteristics, but also better for the majority of agricultural management to provide technical support.

### **5.3 Build Modern Logistics Infrastructure**

To improve the market reaction ability of agricultural products, the means is to develop agricultural products logistics, and to strengthen the logistics management of agricultural products. For agricultural products operators through the modern agricultural logistics way can save transaction costs, increase product sales profits, shorten the operating cycle; for consumers, can get more immediate benefits, not only to speed up the flow of agricultural products, but also to enjoy the high level of service. To consolidate the foundation of the logistics system, it is essential to build the entity system and information network system, they are the elements of the basic logistics system. The material basis of the development of the entity system is: highway construction, railway construction, inland shipping construction. They form the transport system of the logistics system, and the construction of the entity system is also the material foundation for the development of rapid and efficient transportation. Information network construction, accelerate the construction of information network platform for agricultural logistics, we should build a comprehensive information platform for agricultural products logistics, the integration of agricultural products, agricultural products deep processing enterprises, agricultural products distribution center, the integration of the advantages of all parties, and by warehousing transportation and distribution companies as a link to the link.

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