

Research on E-commerce Response Characteristics of New Type of Agricultural Management Subjects

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Abstract: With the development of informatization, e-commerce has brought new opportunities to new types of agricultural management entities and brought new challenges. This paper investigates the understanding of e-commerce providers, the willingness of demand, demand services, and demand realization methods from the perspective of the new type of agricultural business entities, and analyzes the current response status of new-type agricultural management entities to e-commerce. On this basis, this paper chooses probit regression model to analyze the profit characteristics of the new type of agricultural business entities. Regression analysis found that among the factors affecting the profitability of the new type of agricultural business entity e-commerce, electricity merchants and agricultural product brands have a significant impact; the processed agricultural products have a certain impact; the scale of enterprises and infrastructure have less impact. According to the investigation and regression analysis, this paper puts forward the countermeasures and suggestions for strengthening the development of electric merchants, building brands of agricultural products, and promoting the development of agricultural product processing enterprises.

1. Introduction

The new type of agricultural management mainly refers to large professional agricultural families, family farms, farmer professional cooperatives, and leading agricultural enterprises, and is an important driving force for rural reform and development [1]. With the continuous deepening of the division of agricultural production, the new type of business entity has gradually become the main body to break the obstacles to the development of household contract responsibility system, the structural supply and demand contradiction of agricultural products, and promote rural poverty alleviation [2]. With the development of informatization, e-commerce has brought new opportunities for the development of new types of agricultural operations. At the same time, it has also brought new challenges. In the face of e-commerce development torrents, how do they respond and how? In-depth understanding of these issues has important value and significance for the development of new-type agricultural management entities and for the development of agriculture and rural areas.

2. Research Status

At present, there are many studies on agricultural e-commerce. Many scholars analyze the development status of agricultural e-commerce and propose corresponding countermeasures. Wang Jie and Wang Mingyu (2013) explored the current situation of the development of agricultural e-commerce O2O, and proposed that if we really want to realize agricultural modernization and accelerate the pace of rural construction, we must constantly explore the mode of agricultural e-commerce [3]. Zhu Run, Yuan Chao, and Gong Xiang (2016) explored the current status of

agricultural e-commerce development in Henan Province and believed that to speed up the development of Henan's e-commerce, it is necessary to speed up the construction of rural network infrastructure facilities, build a rural shopping network platform, and strengthen farmers. The training of agricultural science and technology and Internet knowledge, strengthening of the "Internet + Agriculture" legislation [4]; Liao Yiyi (2016) analyzed the status quo and existing problems of Wenzhou agricultural e-commerce, and from the e-commerce brand building of agricultural products, personnel training, The development of investment and financing channels and supporting facilities have proposed development strategies [5].

Some scholars have explored the development model of agricultural e-commerce. Xu Xin and Lu Fuqiang (2015) explored the development path of agricultural e-commerce under the mode of land consolidation, and proposed the establishment of a coalition of rural commercial interests, the development of standardized agricultural production, the development of cold chain logistics of agricultural products, and the strengthening of the supervision of quality and safety of agricultural products. [6]. Li Ruiqiang (2016) analyzed the specific application and status quo of online and offline integration services of agricultural e-commerce in the "Internet +" era, and constructed an online and offline integration service model for agricultural e-commerce platforms. [7]

In the development of new-type agricultural management entities for e-commerce, Lu Shuyang studied the welfare effects of the development of new-type agricultural management entities, and believed that the development of e-commerce platform had a significant positive impact on its welfare effect [8]. Wei Yanan believes that the current agricultural e-commerce promotion model is too single and lacks innovation. [9] Liu Junjun believes that cooperative e-commerce model is a feasible path for the development of rural e-commerce in China. [10] Cai Keyun and Wang Xuedong believe that family farms face real challenges in terms of legislation, administration, and judicial relief in the process of e-commercialization. For these three levels of risk, it is possible to carry out institutional regulation and risk resolution through payment, security, logistics specification, taxation determination, and multiple remedies, etc.[11].

It should be said that there are many literatures about agricultural e-commerce, but there are few literatures on the characteristics of new-type agricultural business entities that respond to e-commerce. In terms of research methods, qualitative research is more and quantitative research is less.

3. Investigation and Analysis of the Status Quo of E-Commerce Response of New-Type Agricultural Management Entities

3.1 Statistical Analysis of New Types of Agricultural Management Subjects.

This article has carried out relevant research based on the "Pilot Project of Combining Agriculture, Science and Education with New Types of Agricultural Socialization Services". The task force has collected a total of 478 new agricultural management subjects including agricultural enterprises, farmers' professional cooperation organizations, and family farms through questionnaires, field research, and material analysis. Among them, there are 180 agricultural enterprises, and professional cooperatives have 210 and 88 family farms. Since they are filled in face to face, all questionnaires are valid questionnaires.

3.2 Analysis of E-commerce Requirement.

In the understanding of e-commerce platform, 274 people knew about Alibaba and Taobao, 104 people knew Jingdong, 69 people knew and applied the village communication, 12 people learned about rural China business, and 34 others. The details are shown in Figure 1:

It can be seen from Figure 1 that most of the new types of agricultural management subjects are more familiar with Taobao and Jingdong; secondly, they also know more about agricultural-related websites, and relatively few people know about other websites.

In terms of whether e-commerce is needed to enhance competitiveness, the survey results are shown in Figure 2:

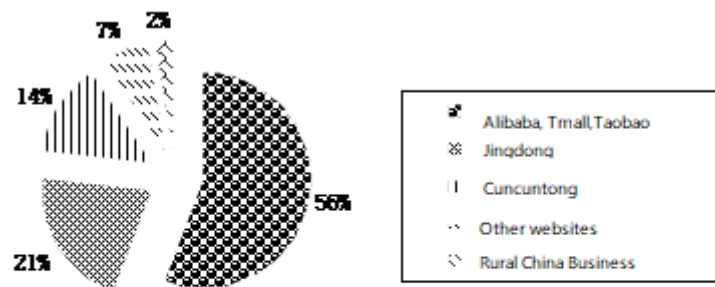


Figure 1 Understanding the e-commerce platform

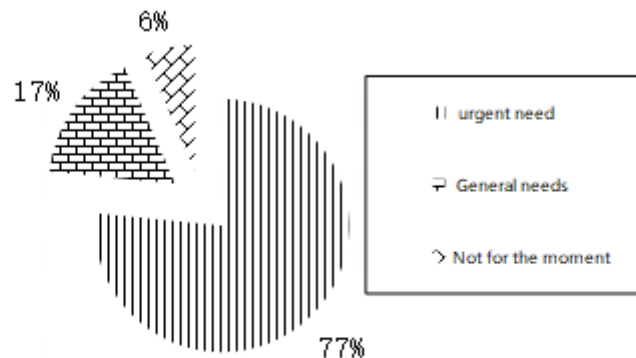


Figure 2 The willingness of new rural operators to use e-commerce to enhance their competitiveness

From Figure 2, we can see that the new type of agricultural business has a high demand for e-commerce. Among them, 366 new types of agricultural management entities think that they urgently need e-commerce to enhance their competitiveness, accounting for 77%; 81 options are generally needed, accounting for 17%; 31 people do not consider it temporarily, accounting for 6%. According to further analysis, most of the new types of agricultural business entities those “embark on an urgent need” of e-commerce are agricultural enterprises and professional cooperatives. These enterprises generally have large-scale production and abundant products, and are trying to promote their sales through e-commerce to help them leapfrog. Most households that choose “general needs” and “do not consider” are family farms. These farms think that their products mainly supply nearby residents. They are small in scale and in short supply, and temporarily do not consider the development of e-commerce.

Regarding the feasibility of selling agricultural products on the Internet, 46 people think that it is feasible; 400 people think that it is worthwhile; 23 people think it is not feasible.

From Figure 3, it can be seen that most of the new-type agricultural management entities hope to carry out online sales. Further interviews revealed that among those who are willing to develop online sales, they believe that online sales can open up sales and bring more profits to enterprises. Among the unwilling groups, some groups think that their products are in short supply and are not necessary at the moment. Network sales were carried out, and other groups believed that the products were not suitable for online sales. In addition, most new types of agricultural business entities have concerns about online sales. On the one hand, they lack the relevant knowledge of online sales, network technicians and network sales personnel, and on the other hand, they lack relevant funds.

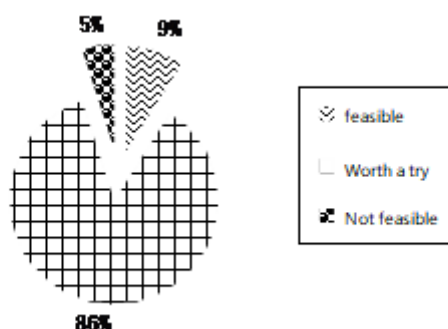


Figure 3 Attitude to Online Sales

Among the services that are most hoped for by the network, 262 people wish to use the Internet to carry out sales and sales of agricultural products; 258 people hope to consult and answer agricultural technologies through the Internet; 257 people hope to learn about new trends in agricultural policies on the Internet; There are 301 people who want to know about the agricultural market information on the Internet; there are 12 others.

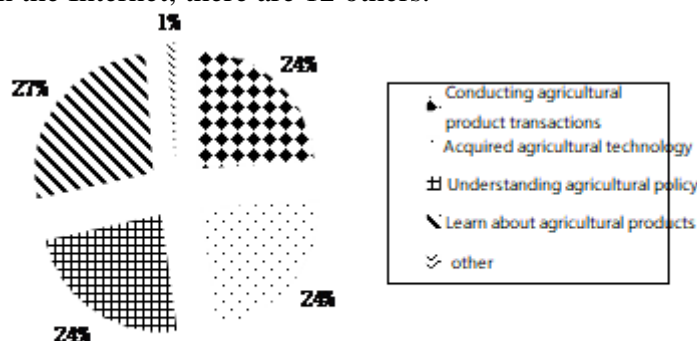


Figure 4 Services provided by the network

Among them, those who wish to trade in agricultural products, most of whom are short of funds, hope to use third-party platforms to carry out sales activities in order to reduce costs; they hope to receive expert guidance and support and support from relevant departments. It is mainly breeding and breeding enterprises that hope to answer agricultural technology problems through the Internet. They hope that they can answer their own technical problems in a timely manner through the Internet in order to enhance the competitiveness of their industries. We hope that we can get the most information on agricultural products from the Internet. They hope to obtain planting-related fertilizers, feeds, and farming tools from the Internet, which will reduce production costs. In addition, they also hope to keep abreast of the prices of agricultural products on the Internet, solve the problem of asymmetric information, accelerate the circulation of agricultural products of their companies, and enhance the competitiveness of their companies.

(1) Access method

In terms of realizing e-commerce, there are 60 people who study independently; 345 people participate in the training; 66 people in the technical exchanges in the neighboring villages; and 50 others.

(2) Attitude to e-commerce training

For the e-commerce training classes, 241 people are eager to participate; 221 are willing to participate; 2 are unwilling to participate. Details are shown in Figure 6.

On the government side, 235 people, or 21.6%, who want to improve the market's disarray, 225 people or 20.7% want to organize science and technology to the countryside, and 224, or 20.6%, want to set up rural cooperatives. They want to support agricultural enterprises. There were 199

people, accounting for 18.3%; 182 people wanted to attract investment, accounting for 16.8%; other 21 people, accounting for 1.9%.

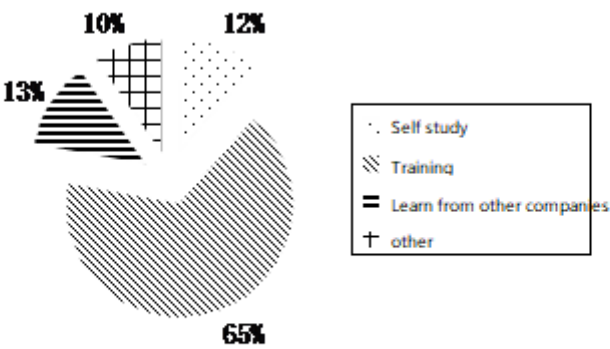


Figure 5 The way to acquire e-commerce knowledge

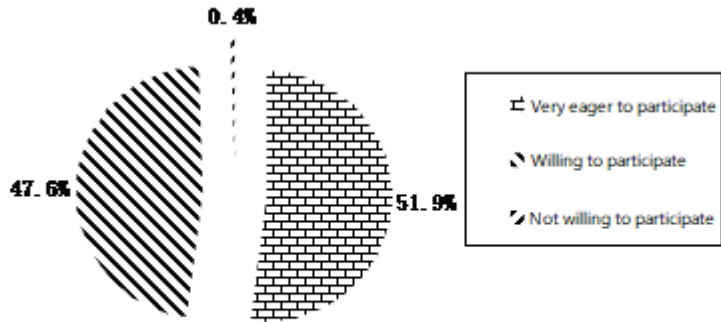


Figure 6 Willingness to attend training courses

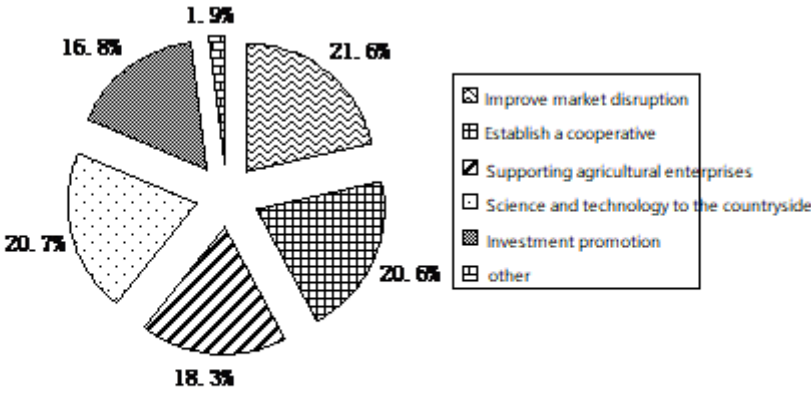


Figure 7 Expectations of the government

4. Regression Analysis of the Characteristics of Probit Response of E-Commerce in New-Type Agricultural Business Entities

Profitability is the guarantee for the new agricultural business entities to engage in the sustainable development of e-commerce. It is from this point of view that when new-type

agricultural management entities are developing e-commerce, the first consideration is to maximize the utility and benefits. In order to dig deeper into its profit characteristics, this study uses the regression model to analyze the main factors affecting the profitability of the new type of agricultural business entities.

4.1 Model Selection and Variable Description.

Probit is a frequently used model for studying response characteristics [12]. Y represents the dependent variable and X represents the variable. The continuous probability distribution function used in this model is a normal distribution function. Therefore, it is:

$$Prob(Y = 1) = \int_{-\infty}^{\beta' X_{it}} \phi(z) dz = \Phi(\beta' X_{it})$$

Among them, β is the parameters to be evaluated.

This study sets two outcomes of Yunnan's agricultural new agricultural business entities engaging in e-commerce: profitability ($Y = 1$) and non-profitability ($Y = 0$); selecting the scale of new-type agricultural business entities, reserve of electric merchants, and logistics status, product type, product brand, etc. as variables affecting profit (X_1 - X_5), the specific variables are defined in the following table:

Table 1 Variable Description

| Y | Whether profitable | 0=No,1=Yes |
|-------|----------------------|--|
| X_1 | Business scale | 0= Less than 50 employees ;1= No less than 50 |
| X_2 | Electric businessman | employees |
| X_3 | Infrastructure | 0= No electricity business professionals ;1= |
| X_4 | product type | E-commerce professionals |
| X_5 | product brand | 0= Weak infrastructure ;1= Better infrastructure |
| | | 0= Fresh produce ;1= Processed products |
| | | 0= No own brand ;1= Have your own brand |

4.2 Model Calculation.

This model uses Eviews 8.0 and the survey sample is 102. The calculation results are shown in Figure 3:

| Dependent Variable: Y | | | | |
|--|-------------|-----------------------|-------------|--------|
| Method: ML - Binary Probit (Quadratic hill climbing) | | | | |
| Date: 04/19/17 Time: 09:09 | | | | |
| Sample: 1 102 | | | | |
| Included observations: 102 | | | | |
| Convergence achieved after 4 iterations | | | | |
| Covariance matrix computed using second derivatives | | | | |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
| X1 | -0.284273 | 0.313470 | -0.906858 | 0.3645 |
| X2 | 1.196096 | 0.315899 | 3.786328 | 0.0002 |
| X3 | 0.112912 | 0.337087 | 0.334964 | 0.7377 |
| X4 | 0.546810 | 0.319548 | 1.711196 | 0.0870 |
| X5 | 1.343690 | 0.319918 | 4.200108 | 0.0000 |
| C | -1.316975 | 0.407515 | -3.231725 | 0.0012 |
| McFadden R-squared | 0.356434 | Mean dependent var | 0.578431 | |
| S.D. dependent var | 0.496249 | S.E. of regression | 0.385093 | |
| Akaike info criterion | 0.993918 | Sum squared resid | 14.23645 | |
| Schwarz criterion | 1.148328 | Log likelihood | -44.68980 | |
| Hannan-Quinn criter. | 1.056444 | Deviance | 89.37961 | |
| Restr. deviance | 138.8818 | Restr. log likelihood | -69.44091 | |
| LR statistic | 49.50222 | Avg. log likelihood | -0.438135 | |
| Prob(LR statistic) | 0.000000 | | | |
| Obs with Dep=0 | 43 | Total obs | 102 | |
| Obs with Dep=1 | 59 | | | |

Figure 8 Model Calculation Results

From Fig. 8, we can see that in Prob. probability, $X_1, X_3 > 0.15$, that is to say, enterprise size (X_1) and public infrastructure (X_3) have no significant effect on profitability; $0.15 > X_4 > 0.01$, Profitability has a certain effect, that is, sales of processed products can promote profitability; $X_2, X_5 > 0.15$, has a significant impact on profitability, which means that electric merchants' reserves (X_2) and product brands (X_5) have a significant effect on profitability.

5. Conclusions and Suggestions

5.1 Strengthening the Cultivating Power of Businessmen.

From the regression analysis, we can see that talent is the key to the development of agricultural e-commerce. No matter whether it is survey and model verification, it has been found that electric merchants play a key role in the development of e-commerce for new types of agricultural business entities. Although in recent years many colleges and universities have set up e-commerce majors and even carried out various trainings, due to the late entry of agricultural e-commerce, there is a shortage of talents, which also leads to the slower development of e-commerce. We should adhere to the "going out, please come in" strategy to accelerate the development of electric merchants. The strategy of "going out" is to plan to send a group of leaders of new-type agricultural management entities, entrepreneurial youth, returning university students, university graduate village officials, etc. to universities or strong leading e-commerce companies to conduct training and study every year, and to issue incentive policies to encourage them. They join in the e-commerce industry and expand the team of farmers and merchants. "Please come in" is to hire e-commerce experts, economists wait until the county to train e-commerce practitioners, improve their quality, build a high-quality and understand the technical and business talents of agricultural product traders and merchants. They will bring in young people from rural areas to engage in e-commerce ventures and implement a number of e-commerce training and practice bases. Through the construction of the base, we will strive to cultivate a batch of composite talents that combine the theory and practical ability of agricultural electricity suppliers.

5.2 Creating a Brand for Agricultural Products.

From the regression analysis, it can be seen that the brand in a region has a very significant impact on its profitability, so the following three tasks should be strengthened: (1) Strengthen the application and certification of the "three products and one target", that is, pollution-free products, The declaration and certification of green foods, organic foods, and geographical indication agricultural products cultivate well-known brands. (2) Accelerate the standardization of agricultural products. Focusing on the agricultural industry, with the focus on well-known agricultural product brands and breakthroughs, we have formulated a set of standard systems that have strong operability, covering bases, production, processing, packaging and other aspects of agricultural products in a planned and systematic manner. (3) Establish a quality and safety traceability system for agricultural products, establish a county, township, village, and group agricultural product inspection and control system, and vigorously promote the market access system.

5.3 Promoting the Development of Agricultural Products Processing Enterprises.

As can be seen from Figure 8, when implementing agricultural electricity suppliers, processed agricultural products have certain advantages. In-depth research found that this is mainly due to the high cold chain requirements of fresh produce. Therefore, the development of the agricultural product processing industry should be further strengthened and the integration of the secondary and tertiary industries should be promoted so as to better promote the sustainable development of the new type of agricultural business entities.

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