
Research on Electronic Commerce Factors of Fruit——An empirical analysis based on Logistic regression model

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Abstract

Based on the factors that may affect the electronic commerce industry chain in fruit, it analyzes the influencing factors of electronic commerce of fruit, extracts the factor, and constructs logistic regression model. The research results show that the influences of the two major factors are significant. For this reason, this paper combines the current development situation, specifically analyzes the empirical research results, and gives corresponding recommendations.

Keywords

Fruit; logistic regression; electronic commerce.

1. Introduction

In recent years, under the background of “The Belt and Road” ^[1], the of electronic commerce of fruit has developed rapidly, breaking the barriers of domestic and foreign trade to a certain extent, and building a good farmer and enterprise for domestic fresh produce of fast and convenient trade channel ^[2]. For this reason, this paper combines the current development situation, specifically analyzes the empirical research results, and gives corresponding recommendations.

There are few studies on the industrialization of electronic commerce. Under the background of “The Belt and Road”, there is a lack of economic improvement and promotion of ecological industries such as agriculture, especially fruit, and an empirical study on the factors affecting the electronic commerce industry chain of fruit ^[3,4].

2. Research methods

2.1 Factor analysis

Factor analysis was used to determine the influencing factors. We use Cronbach's α coefficient to test the credibility of the data. In this process, the main component is screened with the eigenvalue >1 as the evaluation standard, and the load of the observed variable >0.5 is used as the basis for selecting the factor index. The factor load matrix is obtained by using the variance maximization orthogonal rotation method, and according to this matrix, According to the conclusion for the reliability test ^[5], when the Cronbach's α coefficient ≥ 0.7 , the data is higher, and the credibility can be used. It is summarized into eight observable variables, and the corresponding factors are extracted. The larger the α coefficient, the higher the credibility.

2.2 Logistic regression model

This paper uses Logistic regression to analyze the impact of each factor on the electronic commerce of fresh produce. The analysis of factors looks for development directions ^[6]. In this paper, SPSS21.0 is used to estimate the parameters of the development of electronic commerce of fruit through logistic

regression model. The parameter estimation results of the model are obtained, and the model is continuously revised to obtain a model with better fitting degree [7].

3. Materials

3.1 Selection of indicators

Based on the previous research, this paper combines the actual characteristics of electronic commerce of fruit, and builds an electronic commerce impact indicator system for fruit based on the field research data. It Establishes a three-level index(Table 1). The index system is shown in Table 1.

Table 1 Influence index of electronic commerce of Fruit

Primary indicator	The overall impact					
Secondary index	production		technique		service	
Three-level index	price	quality	logistics	equipment	market	trade policy

3.2 Data survey

In this study, counties of fruit production bases were selected from Guanzhong, Southern Shaanxi and Northern Shaanxi provinces. A total of 800 questionnaires were distributed in this survey, including a paper version and an electronic version of the questionnaire. 659 valid questionnaires were obtained, with an effective rate of 82.37%.

3.3 Sample characteristics

In the effective questionnaire, gender distribution of the surveyed population was average with 349 males and 310 females (Table 2).

Table 2 Characteristics of electronic commerce of Fruit

Project characteristics	category	Frequency / person
gender	male	349
	Female	310
age	19~35	114
	36~55	349
	Over 55 years old	296
education level	High school and below	422
	Secondary school	90
	College and above	147

4. Results and analysis

4.1 Data inspection

(1) Reliability test. The reliability test results show that the Cronbach's α coefficient of all factors are all greater than 0.7. Overall, the credibility of the questionnaire is within acceptable limits.

(2) Validity test. In the validity test results, the KMO value was 0.726, and the Bartlett result was significant, that the selected observable variable passed the validity test. It explains that the sample data of this questionnaire is applied to factor analysis.

4.2 Factor analysis

Factor analysis extracted two factors (F_1 , F_2) with contribution rates, due to the minimum standard of cumulative variance contribution rate is 70%, so the two main components extracted are acceptable.

Table 3 Variance explanation of observation variables

Ingredients	Eigenvalues	Cumulative contribution rate/%
1	3.184	43.550
2	1.335	73.462
3	0.918	84.457
4	0.640	91.890
5	0.336	98.984
6	0.001	100.000

4.3 Logistic Regression Model

As can be seen from the foregoing, the factors affecting the of electronic commerce of fruit .The causal relationship between these two influencing factors and the overall impact has been the analysis of the research results which can establish a logistic regression model. The details are as follows:

$$Y = \beta_0 + \beta_1 F_1 + \beta_2 F_2 + \varepsilon$$

among them: β_0 、 β_1 、 β_2 are coefficients of the parameter to be estimated.

The results of the regression are shown in Table 4.

Table 4 Multivariate regression model of electronic commerce of Fruit

Models and variables		t	Sig.	R2	Non-standardized coefficient	
					Coefficient B	Standard error
model	(constant)	-3.772	0.000		-0.546	0.145
	F2	23.821	0.000		0.513	0.017
	F1	5.021	0.003	0.796	0.196	0.012

As can be seen from Table 4, the regression equation is completed by a stepwise method. It can be concluded that as the number of explanatory variables increases, the goodness of fit of the equation increases, and the coefficient of resolving of model is 0.796, and the probability P-value of the significance test is 0.003.

With the continuous changes of these two influencing factors, it will also bring about the same-direction changes of electronic commerce of fruit. For this reason, this paper combines the current development situation of electronic commerce of fruit, specifically analyzes the empirical research results, and gives corresponding recommendations.

5. Conclusion

(1) Domestic fruit technical services are the core factor for the development of electronic commerce exports. Promote the “The Belt and Road” layout of fruit and logistics industry^[8], promote the cooperation between fruit enterprises and logistics enterprises, and provide “the same” in electronic commerce trade through domestic electronic commerce platforms.

(2) Electronic commerce of fruit are supported by synergies between policy advantages and financing advantages. The continuous improvement of the electronic commerce trade policy of the Silk Road Economic Belt can effectively guide the international communication and cooperation of electronic commerce of fruit, and coordinate the different supervision and currency circulation systems between the bilateral markets.

(3) On the basis of the fruit base established in China, the fruit are based on the standards of green ecological product certification. Standardize the post-harvest classification, scientifically classify the grades with reference to international practices, and apply a multi-level international sales market for fruit; establish a high-standard, refined, quality-assured quality control center to meet the world's goals.

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