The Study of Farmers' Information Perceived Risk in China

Jingjing Zhang

The Study of Farmers' Information Perceived Risk in China

Jingjing Zhang[1*]

[1] College of Computer and Information Engineering, Tianjin Agricultural University, Tianjin, 300384, China

* Corresponding author, Address: College of Computer and Information Engineering, Tianjin Agricultural University, No.22 Jinjin Road, Xiqing District, Tianjin, 300384, P.R.China,Email:zhangjingjing1982@126.com

Abstract: The study provides insights into the perceived risk in the course of farmers' agriculture information adoption in China. The information perceived risk model is gotten with the approach of the factor analysis and six aspects constitute the model. The regression equation of farmers' information perceived risk is obtained with the multiple regression analysis in this research. The results show that there are many aspects that farmers consider about when they are applied with new agricultural information and technologies, and information service departments may pay more attention to those especially.

Keywords: perceived risk, information adoption, factor analysis

1   Introduction

Information plays an important role in the agricultural development. Farmers are provided with a variety of information. Meanwhile, there are many obstacles in the process of the information adoption due to some elements, such as information asymmetry, different education and economic levels and so on. The existence of the obstacle factors, leads to the risk considerations. However, there are differences between the perceived risk and the actual risk, and the real respect that affects the decisions is the perceived risk normally. Therefore, it is necessary to resolve and eliminate farmers' perceived risk aiming to take full advantage of the information and technologies.

Perceived risk is an important content of consumer behaviors, which was originally developed by Bauer Raymond from Harvard University. Perceived risk is proposed as the unpredictable result of the product's quality and the feeling of uncertainty which is resulted from the unsuccessful purchase (Qingwen Li, 2007). Previous researchers show that the perception of risks and types of risks all influence the intention significantly (WANG-YIH WU & CHING-CHING KE, 2015).

This paper aims to carry on the theoretical and empirical studies in order to examine and predict farmers' perceived risk of agricultural information.

2   Experiments and Methods

A small investigation is designed and interviews about agricultural information perceived risk are carried out. The items in the questionnaire are measured on a 5-point Likert-type scale (1=strongly disagree to 5=strongly agree).Some inappropriate questions are corrected and 16 questions are retained, which constitute the risk measurement of farmers' perceived risk. The 16 items are proposed as follows.

Item 1: I worry about that information is not timely
Item 2: I worry about that information can not meet the needs
Item 3: People around who have used the information product think the effect is not evident
Item 4: I worry about that I am not able to use the information product
Item 5: I worry about that it is difficult to communicate with the information servers
Item 6: I worry about that information is not helpful enough as expected
Item 7: I worry about that persistent and convenient services are not available
Item 8: I worry about that I am not able to understand the information
Item 9: There are not many people around that have used the information product
Item 10: I worry about that the information is fake
Item 11: I worry about that the information server's introduction is not true
Item 12: Anxiety may appear in the course of using the information product
Item 13: If the effect is disappointing, my confidence will be reduced
Item 14: I do not tend to take a risk
Item 15: I am not able to pay for the information product
Item 16: I worry about that information searching and obtaining may cost me much

A total of 231 effective questionnaires are returned. The sample comes from 13 provinces in China. The characteristics are presented in table 1.

Table 1.   The characteristics of the sample

Categories	Number	Percentage %
Gender		
Male	161	69.7
Female	70	30.3
Age group		
18-30	44	19.0
31-40	77	33.3
41-50	69	29.9
51-60	34	14.7
Over 60	7	3.03
Education level		
None	22	9.52
Primary education	50	21.6
Secondary education	105	45.5
Higher education	42	18.2
Over	12	5.19

3   Results and Discussion

The Cranach's alpha coefficient of the scale is 0.78, which has a good credibility. Bartlett's test and KMO test are carried out in order to confirm whether the factor analysis is suitable to be performed.

The results show that the KMO value is 0.783, and the factor analysis is fit to be carried out generally when the KMO value is more than 0.7. The outcome of the Bartlett's test is 0.000, and it is less than the significance level, which is 0.01.The results of KMO test and Bartlett's test both show that the factor analysis is suitable. Results are listed in table 2.

Table 2.   The test of KMO and Bartlett's

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.783
Bartlett's Test of Sphericity	Approx. Chi-Square	344.344
	df	28
	Sig.	.000

Six factors are extracted from the 16 items based on the factor analysis. The total variance is 82.316%, which shows that these 6 factors have covered all those items. The results are described in table 3.

Table 3.   The variance contribution rates

Factors	Variance contribution rates	Cumulative variance contribution rates
1	23.871	23.871
2	18.756	42.627
3	15.010	55.637
4	10.332	67.969
5	8.801	75.770
6	6.546	82.316

In this research, farmers' perceived risk is divided into six parts, which is shown in table 4. The first part, including item 2、item 7 and item 11, is related to the information service departments, which may be summarized as the service risk. The second part, including item 10、item 1 and item 6, reflects that farmers worry about the function of the information product, which may be summarized as the function risk. The third part is summed up as the individual risk, which is related to the ability of information understanding and adoption. In the fourth part, the two factors are related to the economic condition, so it is named as the cost risk, and it is also contains the cost of the skill training and the time in the process of searching. The fifth part mainly shows that farmers are anxious for the effect of the information

product, so it may be summarized as the psychological risk. The sixth part is mainly about the social relationship of farmers, which reflects the influence of other people, so it is named as the social risk. Farmers' information perceived risk model is shown in figure 1.

Table 4. Results of the factor analysis

	Fart 1	Fart 2	Fart 3	Fart 4	Fart 5	Fart 6
Item 2	0.802					
Item 7	0.723					
Item 11	0.652					
Item 10		0.765				
Item 1		0.638				
Item 6		0.547				
Item 4			0.754			
Item 8			0.632			
Item 5			0.552			
Item 16				0.694		
Item 15				0.488		
Item 12					0.611	
Item 13					0.493	
Item 14						0.578
Item 3						0.472
Item 9						0.337

The causal relationship between the dependent variable and the independent variable is determined with the regression analysis, which is a statistical analysis method. The multiple regression analysis is adopted to calculate the influence of each component of the perceived risk on the total perceived risk. The result of the multiple regression analysis is shown in table 5.
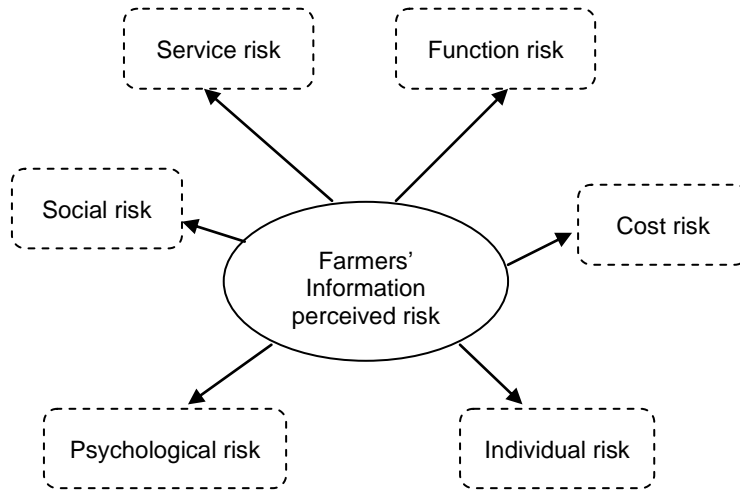
Fig. 1. Farmers' information perceived risk model

Table 5. Weights of farmers' information perceived risk

	Elements	Regression coefficient	T test	Significance level
X_1	Service risk	0.287	9.544	0.000
X_2	Function risk	0.256	5.476	0.001
X_3	Individual risk	0.214	3.246	0.003
X_4	Cost risk	0.125	2.674	0.006
X_5	Psychological risk	0.076	1.235	0.008
X_6	Social risk	0.042	0.348	0.033

Therefore, the regression equation of farmers' information perceived risk is as equation (1). It shows that the service risk and the function risk may affect farmers' information perceived risk evidently. Farmers are likely to pay more attention to these aspects, such as whether the service is timely and reliable, whether the information and technologies are useful and so on.

$$PR=0.287X_1+0.256X_2+0.214X_3+0.125X_4+0.076X_5+0.042X_6 \qquad (1)$$

4   Conclusions

This paper studies farmers' information adoption from the perspective of the perceived risk based on the investigation and the statistical analysis. Six aspects are concluded, which are the service risk, the psychological risk, the function risk, the society risk, the individual risk and the cost risk. The regression equation is obtained

and the result indicates that the service risk and the function risk are the most important determinants that farmers consider about. Information servers may think more about these aspects when they provide farmers with information and technologies. The agriculture information service is a persistent project and it needs the joint effort of the government, social organizations, enterprises and farmers for a long period.

The outcomes might not be very accurate due to the small sample. Farmers may be divided into several types, and different kinds of farmers pay attention to different risks. The next research will focus on the risk preference with a larger sample to discuss about the information adoption of farmers thoroughly.

References

1 Jillian Matrin,Gary Mortimer,Lynda Andrews.Re-examining online customer experience to include purchase frequency and perceived risk [J].Journal of Retaling and Consumer Services,2015,25(7):81-95.

2. Jin Jianjun,Gao Yiwei,Wang Xiaomin,Pham Khanh Nam.Farmers'risk preferences and their climate change adaptation strategies in the Yongqiao District,China [J].Land Use Policy,2015,47(9):365-372.

3 Mark Horst, Margot Kuttschreuter, Jan M.Gutteling. Perceived Usefulness, Personal Experinces, Risk Perception and Trust as Determinants of Adoption of E-government Services in The Netherlands [J]. Computers in Human Behavior, 2007, 23:1838-1852.

4. Natalie Lynch, Dianne Berry. Differences in Perceived Risks and Benefits of Herbal, over-the-counter Conventional, and Prescribed Conventional, Medicines, and the Implications of this for the Safe and Effective Use of Herbal Products [J]. Complementary Therapies in Medicine, 2007, 15: 84-91.

5. Qingwen Li. The empirical study of risk perception of shopping online of consumers [J]. Economic and Social Development, 2007, 5(12):55-57.

6. Qing Yang,Chuan Pang,Liu Liu,David C.Yen,J.Michael Tam.Exploring consumer perceived risk and trust for online payments:An empirical study in China's younger generation [J].Computers in Human Bahavior,2015,50(9):9-24.

7. WANG-YIH WU, CHING-CHING KE.An online shopping behavior model integrating personality traits, perceived risk, and technology acceptance [J].Social Behavior and Personality, 2015, 43(1), 85-98.

8. Xi Lu,Xiaofei Xie,Lu Liu.Inverted U-shaped model: How frequent repetition affects perceived risk [J].Judgment and Decision Making,2015,10(3):219-224.