

Original Paper

Risk Cognition and Behavior Analysis of Online Shopping of Agricultural Materials for Young Rural Residents

Zhou Jun¹ & Chung Gi-Young²

¹ Shiyuan College of Nanning Normal University, China

² SEHAN University, Korea

Received: April 25, 2022

Accepted: May 14, 2022

Online Published: May 24, 2022

doi:10.22158/jetss.v4n2p18

URL: <http://dx.doi.org/10.22158/jetss.v4n2p18>

Abstract

Most young rural residents have had the experience of online shopping, but online shopping of agricultural materials are not popular. This paper hopes to construct an empirical model to analyze the behavior through the cognitive research on the key risk factors, including the quality risk of online agricultural products and after-sales service risk (general online shopping risk and technical service risk factor), which affect young farmers' choice of online agricultural materials. The results showed that there was a significant negative correlation between the perceived risk of agricultural materials online shopping and the attitude and willingness of young farmers. The greater the perceived risk, the lower the attitude and willingness of agricultural materials online shopping. The attitude of purchasing agricultural materials online shopping played a partial intermediary role in the relationship between perceived risk and willingness to purchase agricultural materials online. The stronger the willingness to buy agricultural materials online, the higher the conversion rate will be. Therefore, mastering the willingness and behavior of young farmers to online purchase agricultural materials and guiding them can change the backward development of agricultural materials e-commerce, boost rural agricultural production and accelerate the revitalization of Rural China.

Keywords

Young Farmers, Online shopping of agricultural materials, risk cognition, Online shopping behavior

1. Introduction

1. Research Background

Internet + e-commerce + agriculture has been entrusted with the task of rural revitalization. The development of agricultural e-commerce has closely linked agricultural production with e-commerce, and e-commerce has become an important means to help agriculture, revitalize rural areas and fight

poverty. Imedia Consulting released the report on The Development of China's E-commerce agricultural Products in 2021 at the 2021 National Agricultural Business Interconnection and Rural Revitalization Production and Sales Matchmaking Conference. The report pointed out that the sales of e-commerce agricultural products in 2020 exceeded 600 billion yuan, helping 34,000 families to get out of poverty during the epidemic (Li, 2020). Online retail sales in rural areas reached 2.05 trillion yuan in 2021, up 11.3 percent from the previous year, or 2.4 percentage points faster. Online retail sales of agricultural products nationwide reached 422.1 billion yuan, up 2.8% year on year (Shenzhen Zhongshangqing Big Data Co., LTD. 2022). It shows that the development of rural e-commerce plays a major role in promoting the sales and production of agricultural products. It has played an important role in increasing farmers' income, promoting rural development and promoting agricultural upgrading, and has gradually become an important force for poverty alleviation and rural revitalization.

Although agricultural products e-commerce is on the rise, agricultural production materials, which are extremely important for agricultural production, have not solved the problem of convenient online sales. Even if the major e-commerce platforms, the major agricultural materials manufacturers, a variety of large agricultural materials agent management enterprises strongly recommended the layout, the market is still calm. According to the Ministry of Commerce, online retail sales of agricultural products in 2021 amounted to 422.1 billion yuan, up 2.8 percent, 23.4 percentage points lower than the previous year. In sharp contrast, online retail sales in rural areas reached 2.05 trillion yuan, an increase of 11.3% over the previous year, 2.4 percentage points faster (State Innovation Office, 2022). The rural online purchase amount here reached 2.05 trillion yuan, indicating that rural residents have already become more and more accustomed to online shopping. The sales of agricultural products still increased even during the epidemic period. Although the increase is lower than that of rural online retail sales, how many online shopping of agricultural materials in this rapidly developing rural online retail? Agricultural materials online such figures can hardly query to get on the Internet, instructions for agricultural materials purchasing is not just over 40 old farmer group for purchasing habits reasons rather than online mode, even under the age of 30 young farmers are not first choose convenient shopping way. the reason need to ponder and research.

Some scholars have carried out corresponding research on agricultural materials e-commerce and farmers' purchase willingness and behavior. Research indicates that, farmers are less willing to buy agricultural materials, only 10.4% of farmers have online shopping experience (Li, Zhao, Liu, et al., 2018). The reasons for the low willingness and behavior of online shopping are mainly because the offline trust has not migrated to the online trust, and the lack of sensory experience, which brings farmers a sense of "invisible and untouchable" (Li & Zheng, 2021; Lee, 2009). These studies show that for all farmers, it is really impossible to perceive the quality of agricultural products online, thus creating a sense of distrust, after all, the main force engaged in agricultural production is still the middle-aged and elderly people over 40 years old. However, these studies ignore whether the future agricultural production will inevitably rely on the young farmers, who have become accustomed to the

habit of online procurement in their study and work, and will bring new changes to the procurement mode of agricultural production means. Therefore, it is necessary to further study the willingness of young farmers to buy agricultural products online and their influence on purchasing behavior, so as to judge the future development and trend of agricultural materials e-commerce.

1.2 Research Purpose

For the future young farmers to return to their hometown to engage in agricultural production, whether their cognition and behavior of the existing online shopping agricultural materials have changed. For the study of young rural residents to online agricultural materials attitude and cognition, this article through now engaged in agricultural production, including part not full-time engaged in agricultural production activities of 217 young farmers, from the agricultural materials procurement risk perception factors, segmentation and seek to learn young farmers to the key risk factors of agricultural materials procurement. Empirically test the impact of perceived risk factors on the willingness and behavior of young farmers to buy agricultural materials online, and expect to provide effective reference significance for the business development of the government, agricultural materials e-commerce enterprises and agricultural industry entrepreneurs.

2. Theoretical Analysis and Research Hypothesis

2.1 Risk Perception Theory

Risk perception is the subjective judgment that people make about the characteristics and severity of a specific risk, and it is an important indicator to measure the public psychological panic (Li, 2008). A basic cognitive process can be abstract for perception, cognitive processing, thinking and application of three parts, namely the individual according to intuitive judgment and subjective feeling experience, according to the environmental stimulus, information record, screening, condensed into knowledge and memory, to make the subjective risk determination, and to escape, change, accept risk attitude and behavior decision judgment (Su, Yin, Gao, et al., 2009).

2.2 The Relationship between Perceived Risk and the Willingness to Buy Agricultural Materials Online

Zhou and Chung (2022) divides the key perceived risks of farmers 'agricultural materials online into three categories: product perception risk, service perception risk and technology perception risk, and believes that product perception risk and service perception risk have a significant impact on farmers' willingness to buy agricultural materials online, and technology perception risk has an impact on farmers' willingness to buy agricultural materials online but not significant. Although existing studies have shown that only a few farmers may have the experience of agricultural materials online shopping because of the perceived risk, However, for young farmers, because they live in the era of network development and e-commerce popularization, whether it is consistent with the risk perception and procurement behavior of the overall farmers should be discussed. Combined with the above existing studies, in the specific research on young farmers, it is necessary to further obtain the risk cognition and behavioral impact of young farmers on the special group of online agricultural materials.

2.3 Study Hypotheses and Models

Based on the characteristics of the Internet age of young farmers, From the above related theories and the particularity of agricultural materials, Combined with the analysis of its online shopping links, Reference to the Zhou and Chung (2022) proposed the research hypothesis and research theoretical model, Because farmers are accustomed to integrating technical services as part of the agricultural materials services, therefore, Therefore, the perceived risks of payment and privacy, which are the same as those of online shopping of general products, are not included in the survey as general product online shopping are not included in the investigation scope, The perceived risk of young farmers' online agricultural materials is divided into two categories: perceived risk of product quality and after-sales service perception risk closely related to network agricultural materials. After-sales service perceived risk is subdivided into general online shopping service perceived risk and technical service perceived risk. Therefore, the research assumptions and theoretical models of the research subjects are set as follows:

1) Study assumptions

H1: The key perceived risk of young farmers has a negative impact on the willingness to buy agricultural materials online.

H1-1: The product quality perception risk of young farmers has a negative impact on the willingness to buy agricultural materials online.

H1-2: The perceived risk of after-sales service of young farmers has a negative impact on their willingness to buy agricultural materials online.

H1-2-1: The perceived risk of general online shopping services of young farmers has a negative impact on the willingness to buy agricultural materials online.

H1-2-2: The perceived risk of technical services of young farmers has a negative impact on the willingness to buy agricultural materials online.)

H2: The key perceived risk of young farmers has a negative impact on the attitude of online shopping for agricultural materials.

H3: The key perceived risk of young farmers has a negative impact on the willingness to buy agricultural materials through their attitude to buy agricultural materials.

H4: Young farmers' willingness to buy agricultural materials online has a positive impact on online shopping behavior.

2) Theoretical model

The theoretical model of the relationship between young farmers' key perception of risk and the willingness of online agricultural materials and their influence on the behavior of online agricultural materials (see Figure 1).

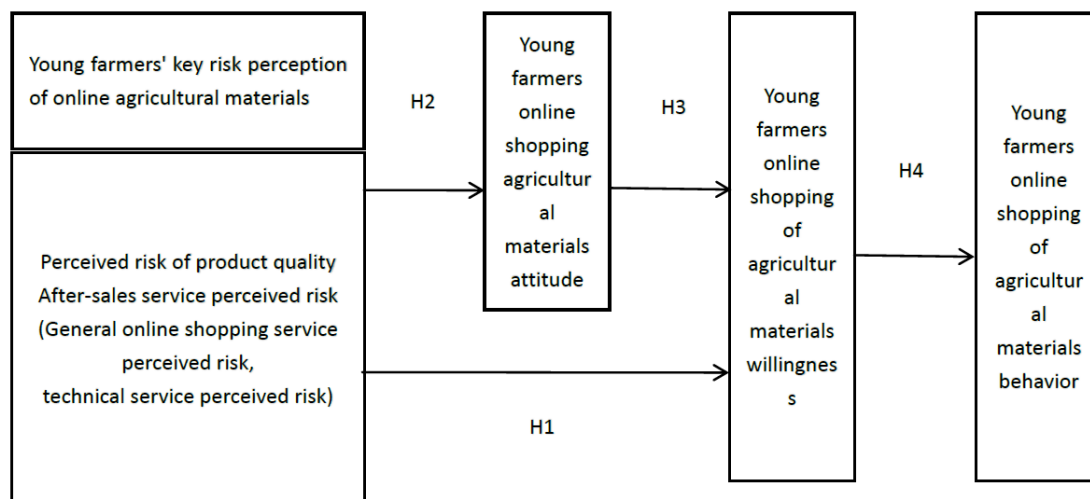


Figure 1. Theoretical Model of Agricultural Materials

3. Questionnaire Design and Data Sources

3.1 Questionnaire Design

1) The risk perception scale in this paper refers to the study of Liang (2012). The questionnaire measurement question adopts level 5 Likerts scale, and level 1-5 indicates very disagree, disagree, general, consent and very consent respectively. The variables and contents of the specific policy measures are shown in Table 1.

Table 1. Design of Variables and Measurement Index

variable	number of entry	content
Young farmers' key perception of online agricultural materials	3	The quality of online agricultural products is unreliable. Online agricultural products are not cheap. Online shopping of the quality of agricultural products can not guarantee a bumper harvest.
Perceived risk of product quality	3	Can not receive the product in time after purchase. Defective products cannot be replaced in time. The service attitude of the customer service is unsatisfactory.
After-sales service perceived risk	3	Online shopping cannot provide technical services for crop diseases and insect pests. There are no technical services for the
General online shopping service perceived risk		
Technical service perceived risk		

Young farmers online shopping agricultural materials attitude	3	<p>agricultural products purchased.</p> <p>Reasons for crop failure cannot be analyzed.</p> <p>The existing agricultural materials online shopping attitude is optimistic attitude.</p> <p>Think that online shopping of agricultural materials is the future trend.</p> <p>Support the construction and development of online shopping of agricultural materials.</p>
Young farmers online shopping of agricultural materials willingness	3	<p>Willing to buy agricultural products online.</p> <p>Choose the priority to buy agricultural products online.</p> <p>Willing to recommend relatives and friends to buy agricultural products online.</p>

2) For the measurement of young farmers' willingness to buy agricultural materials into their online agricultural materials behavior, only two measures are selected, which is the answer yes or not.

Specific variable design: have you ever bought agricultural products online? YES or NOT.

3.2 Data Source and Sample Characteristics

1) Data source: In May 2022, a survey was launched in Guangxi, China, targeting young rural residents aged under 30 years old in Guangxi. Through the online remote survey on the questionnaire survey website, a total of 217 questionnaires were finally recovered on the network, of which 17 were those aged 30-40 and were not included in the questionnaire data. After sorting the remaining 200 questionnaires, 180 valid questionnaires and 20 invalid questionnaires were obtained. The efficiency of the questionnaire for young rural residents was 90.0%, which met the requirements of the quantity and quality of the questionnaire survey.

2) Basic characteristics of the sample:

The basic characteristics of valid samples are shown in Table 2. Among the surveyed personnel, gender distribution: female slightly accounted for 71.67%; Age distribution: 72.22% were 20-30 years old, 27.78% were under 20 years old; Education level: 14.44% and 52.22% of the total, accounting for 66.66% higher education level.

Table 2. Basic Structural Characteristics of the Valid Samples

basic feature	class	number of people	scale%
sex	man	51	28.33%
	woman	129	71.67%
age	Under 20	57	27.78%
	20-30 Years old	143	72.22%
	Junior high school below	28	13.89%
degree of education	senior middle school	36	19.44%
	junior college	30	14.44%
	Bachelor degree or above	106	52.22%

4. Data Analysis and Results

4.1 Reliability and Validity Test

Because the behavior of young farmers online purchasing agricultural materials is only measured by yes and no, it is not included in the reliability and validity test here.

1) The Cronbach's α coefficient test was used to analyze the reliability and validity of key perceived risk, attitude towards agricultural materials online shopping and willingness to purchase agricultural materials online shopping. SPSS23.0 software was used for the test, and the test results showed that the lowest α coefficient was 0.706 and the highest α coefficient was 0.871, which was higher than the acceptable standard of 0.7, indicating that the scale had good reliability. The KMO test value was between 0.675 and 0.771, which was greater than the acceptable standard of 0.5. The Bartlett sphericity test value was significant $P=0.000$. Comprehensive analysis showed that the scale had good convergence validity. Therefore, the questionnaire in this paper has good reliability and validity and is suitable for further test and analysis.

Table 3. The Reliability and Validity Test Results

measurand	number of terms	Cronbach's α	KMO	Bartlett' test
Perceived risk of product quality	3	0.711	0.671	0.000
After-sales service perceived risk	6	0.811	0.771	0.000
(General online shopping service perceived risk	3	0.842	0.715	0.000
Technical service perceived risk)	3	0.871	0.731	0.000
Agricultural materials online shopping attitude	3	0.834	0.698	0.000
Agricultural materials online shopping willingness	3	0.706	0.675	0.000

4.2 Fitness Verification of the Model

Using AMOS21.0 to verify the model adaptation, select absolute adaptation, relative adaptation, contracted adaptation and other indicators, the results are shown in Table 4: most of the test values meet the standard or close to the standard requirements, comprehensive consideration, that the reference model proposed in this paper meets the requirements of model adaptation.

Table 4. Model Fit Tests

Specific indicators	bear fruit	Recommended value
CMIN/DF	2.345	<3
RMR	0.031	<0.05
RMSEA	0.087	<0.08
GFI	0.882	>0.90
AGFI	0.823	>0.80
NFI	0.874	>0.90
TLI	0.898	>0.90
CFI	0.922	>0.90
IFI	0.924	>0.90
PNFI	0.666	>0.50
PCFI	0.703	>0.50
PGFI	0.588	>0.50

4.3 Data Analysis and Results

1) The impact of key perceived risk factors on the willingness to buy agricultural materials online (dependent variables)

The results show that the risk of product quality perception has a significant negative correlation on the willingness of young farmers to buy agricultural materials online ($B = -0.322$, $t = -5.026$, $P < 0.001$), which verified the establishment of H1-1;

General online shopping service perception has significant negative correlation ($B = -0.226$, $t = -3.721$, $P < 0.001$), verifying the establishment of H1-2-1 and the risk of technical services ($B = -0.121$, $t = -2.244$, $P = 0.026 < 0.05$), verifying the establishment of H1-2-2 ;So h1-2 is true.

Therefore, combined with the above analysis, the H1 was established.

2) The impact of perceived risk on attitudes (dependent variable) of agricultural materials online shopping.

Result display Product perceived risk has significant negative correlation to the attitude of young farmers ($B = -0.404$, $t = -4.558$, $P < 0.001$); general online shopping service perceived risk ($B = -0.262$, $t = -3.118$, $P < 0.01$); technology perceived risk is negative correlation to young farmers ($B = -0.083$, $t = -3.118$, $P < 0.01$);

= -1.118, $P = 0.265$). The impact of perceived risk of technical service in perceived risk of after-sales service on attitude of agricultural materials online shopping is not significant. In the cognition of after-sales service of agricultural materials, technical service is considered to be a part of after-sales service. Therefore, the two factors of perceived risk of after-sales service are combined as independent variables and analyzed again. The results showed that there was a significant negative correlation between the perceived risk of after-sales service and the attitude of online agricultural materials ($B = -0.560$, $t = -6.068$, $P < 0.001$).

Therefore, we verified that H2 holds.

3) Analysis of the mediating effect of young farmers' cognitive attitudes on key perceived risks and willingness to purchase agricultural materials online .

Three regression models were constructed with the willingness of farmers to buy agricultural materials as the dependent variable, as shown in Table 5.

Table 5. Intermediary Role of Online Shopping Attitude of Agricultural Materials

Regression model 1		Regression model 2		Regression Model 3	
argument	B	argument	B	argument	B
Product quality is perceived as a risk	-0.322***	Online shopping of agricultural materials attitude	0.639***	Product quality is perceived as a risk	-0.099*
General online shopping services perceive the risk	-0.226***			General online shopping services perceive the risk	-0.081*
Technical services perceive the risk	-0.121*			Technical services perceive the risk	0.075*
				Online shopping of agricultural materials attitude	0.553***

pour:* For $P < 0.05$,* * For $P < 0.01$, *** For $P < 0.001$.

The results showed that in regression models 1 and 3, the significance of young farmers' perceived risk of product quality and perceived risk of after-sales service on their willingness to purchase agricultural materials online decreased. In regression models 2 and 3, young farmers' attitude towards agricultural materials online shopping has a significant positive correlation with their willingness to purchase agricultural materials online, indicating that their attitude towards agricultural materials online shopping plays a partial intermediary role in the relationship between key perceived risks and young farmers' willingness to purchase agricultural materials online. H3 was verified.

4) The conversion of willingness to purchase agricultural materials online to behavior was measured Taking the behavior of young farmers' online shopping of agricultural materials as the dependent variable (refer to the 5-level Likerts scale, and set the answer "no" to 2 and "yes" as 4), young farmers are willing to buy agricultural materials online Regression analysis was performed for the independent variables, and the results indicated The willingness to buy online agricultural materials had a significant positive correlation on the behavior of online agricultural materials ($B = 0.783$, $t = 7.215$, $P < 0.001$), which verified the establishment of H4;

5. Conclusion and Discussion

5.1 Research Conclusions

The results show that perceived risk of product quality and perceived risk of after-sales service have significant negative correlation with young farmers' willingness to purchase agricultural materials online. Perceived risk of product quality and perceived risk of after-sales service have significant negative correlation with young farmers' attitude toward online agricultural materials. The attitude of agricultural materials online shopping plays a significant mediating role between key perceived risks and young farmers' willingness to purchase agricultural materials online. Therefore, the perceived risk of product quality and after-sales service affects farmers' willingness to purchase agricultural materials online by influencing their cognitive attitude.

The willingness of online agricultural materials has a significant positive correlation with the behavior of online agricultural materials, indicating that the higher the willingness of farmers to buy online agricultural materials, the more behaviors of online shopping agricultural materials.

5.2 Discussion and Suggestions

As young rural residents under the age of 30, they generally accept the online purchase of materials by e-commerce. In terms of the current situation of rural, the elderly or main engaged in agricultural production, part although young farmers engaged in agricultural production activity, but most still is given priority to with except work, How to guide these young farmers who return to the countryside from the cities to really use the Internet to purchase agricultural materials to engage in production activities, and influence the future agricultural production activities to obtain more efficient and convenient agricultural technical services, faster to enhance the competitiveness of agricultural production. Therefore, based on this study, we suggest that:

1) The first thing is to reduce the perceived risk of online agricultural materials and enhance the trust of young farmers in online agricultural materials. The risk of young farmers to buy agricultural materials online comes from the fear that the quality of agricultural materials purchased cannot be guaranteed, the time delay of agricultural time, and the technical services are not in place, therefore, Government departments need to actively guide brand agricultural materials manufacturers to actively participate in the construction or stay in the e-commerce platform, At the same time, to strengthen market supervision, With the original brand force to obtain the young farmers to the product quality

recognition; Secondly, we need to rely on the logistics system of agricultural products e-commerce from township to table, Reverse the establishment of a sound provincial-county-township-village rural agricultural materials e-commerce logistics system, Ensure that the purchase of agricultural materials can be timely delivered to the fields; Give full play to the role of township agricultural technical service centers, Encourage brand agricultural materials manufacturers to sign contracts by relying on township agricultural service centers, Solve the problem of agricultural technical service in the field, On the basis of the existing information technology, Can build and open the long-distance agricultural expert technical service system, Escort for agricultural production.

2) Regarding the attitude of online shopping of agricultural materials, the government and enterprises should actively carry out agricultural knowledge and e-commerce knowledge and technology training for young farmers. Through training, we can change young farmers' attitude towards online purchasing agricultural materials, change their cautious attitude towards online purchasing agricultural materials, improve their practical operation ability, enhance their confidence in online purchasing agricultural materials products, and enhance their willingness to take the initiative to online purchasing agricultural materials.

3) The government's improvement of rural infrastructure construction and enterprises' continuous improvement of after-sales service are important measures to improve the sustainable behavior transformation of young farmers' online purchasing of agricultural materials. Young farmers themselves have higher education level than middle-aged and elderly farmers, and have formed certain habits of online shopping. Therefore, with appropriate network facilities and continuous after-sales service, young farmers' willingness to online shopping will be greatly transformed into online shopping behavior of agricultural materials, thus forming a virtuous cycle of continuous transactions between farmers and agricultural materials enterprises. It provides convenience for young farmers to obtain high-quality agricultural products and efficient after-sales service, thus further promoting the development of agricultural production and providing important supply side strategic material guarantee for rural e-commerce to help rural revitalization.

Fund Item: Guangxi Education Reform Project of 2022 "Exploration and practice of teaching mode of integration of professional education and innovation and entrepreneurship education in cross-border e-commerce platform training courses under the background of entrepreneurship and entrepreneurship" (No. 2022JGA433).

Shiyuan College of Nanning Normal University 2020 university-level education reform project "network entrepreneurship actual teaching mode research" (No. 2020JY07).

Shiyuan College of Nanning Normal University 2019 University-level scientific research project "Study on financial Support of Guangxi Rural Revitalization Strategy" (No. 2019KY15)

References

- Lee, M. C. (2009). Factors influencing the adoption of internet asking: an integration of TAM and TPB with perceived risk and perceived benefit. *Electronic Commerce Research and Application*, 8(3), 130-141. <https://doi.org/10.1016/j.elerap.2008.11.006>
- Li, Hongfeng. (2008). Review of the risk cognition research methods. *Journal of Anqing Normal University: Social Science Edition*, 27(1), 18-22.
- Li, Lin-Zhu, Xu, Guang-Lan, & Li, Yan-jun. (2018). The Effect of Sensory Experience on Farmers' Willingness of Agricultural Materials Online Shopping at Agency Service Stations. *Hubei Agricultural Sciences*, 57(18), 121-124, 136.
- Li, B. K., & Zheng, W. (2021). Influencing factors and paths of rural residents' willingness to shop online for agricultural inputs: Based on a survey data of farmers in 17 provinces. *Research of Agricultural Modernization*, 42(5), 000-000.
- Li, B. K., Zhao, B., Liu, Y., et al. (2018). An investigation and analysis on willingness to pay of rural residents' online consumption. *Management World*, 34(6), 94-103.
- Li, Weikang. (2021) In 2020, China's agricultural products e-commerce sales exceeded 600 billion yuan, and the origin of brands began to rise. *Southern Rural News*, 2021-10-27 00:21. <http://static.nfapp.southcn.com/content/202110/27/c5875675.html>
- Liang, Jian-ai. (2012). An Empirical Study on the Effect of Customer-perceived Risk on Internet retailers. *Enterprise economy*, 2012(08), 110-114.
- Shenzhen Zhongshangqing Big Data Co., LTD. (2022). The Market review of China's rural e-commerce industry in 2021 and the forecast and analysis of the development trend in 2022. China Business Intelligence Network, 2022-04-0200:51. <https://baijiahao.baidu.com/s?id=1728925561315412262&wfr=spider&for=pc>
- State Innovation Office, China Business News. (2022). Rural e-commerce to differentiation! Agricultural products upward trend is difficult, and the total online retail sales gap reached 160 million. The Paper government affairs: E-commerce released 2022-03-0221:11. https://m.thepaper.cn/baijiahao_16922487
- Su Yun, Yin Yanyu, Gao Lirong, et al. (2009). Analysis of factors affecting public awareness of earthquake disaster risk-taking Kashgar and Urumqi in Xinjiang as an example. *Northwest seismology Journal*, 31(1), 51-56.
- Sun Juan, Bao Yuze, & Li Yanjun. (2016). "Situation reason method" of agricultural materials online shopping under the situation of "Internet +": an empirical study of farmers' online trust construction mechanism. *Finance and Economics (Journal of Zhejiang University of Finance and Economics)*, 2016(12), 82-93.
- Zhou Jun, & Chung, Gi-Young. (2022). Key Perceived Benefit in The E-commerce Environment Analysis and Research on Farmers' Willingness and Behavior of Agricultural Materials for Online Shopping. SEHAN University collected papers, 2022(2), 000-000.