



Research on Purchasing Behavior of Understory Edible Mushroom Based on SOR Model

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Abstract

With the popularization of the concept of healthy eating, the consumption of edible mushroom with both edible and medicinal value has been driven. The development of the production model of understory edible mushroom in Heilongjiang province, China, not only satisfies the public's pursuit of healthy food but also conforms to the development trend of green agriculture. In this context, to make the understory edible mushroom industry in a broader consumer market, based on SOR (stimulus, organism, response) theory, this paper analyzed the influence of various elements in the understory edible mushroom industry chain on consumers' purchasing behavior. Firstly, we collected data through a questionnaire to investigate the purchase status and influencing factors of understory edible mushroom products in Heilongjiang province, China. Then we made assumptions and used the structural equation model to judge whether the assumptions between variables are valid. The results show that the product quantity, product quality, product types, packaging of by-products, etc., will affect consumers' willingness to purchase understory edible mushrooms in Heilongjiang province, China, thereby affecting purchasing behavior of Chinese consumers. Finally, we put forward suggestions to relevant departments to jointly promote the development of understory edible mushroom industry in Heilongjiang province, China.

Keywords: *understory edible mushroom, SOR model, purchasing behavior, influencing factors*

1. Introduction

With the improvement of economic level, the public began to pursue healthy diet, with both edible value and medicinal value of edible mushroom are favored. The planting pattern of understory edible mushroom conforms to the trend of green agriculture and sustainable development in the new era and is a forest-oriented agroforestry win-win economic pattern^[1]. This pattern mainly uses the shady environment to create an environment suitable for the growth of mushroom, so as to cultivate edible mushroom products^[2]. Heilongjiang province in China, with its superior climate and abundant resources, can vigorously develop the understory edible mushroom industry and build an industrial chain with distinctive characteristics and rich varieties of edible mushroom^[3]. Therefore, this paper selects the understory edible mushroom in Heilongjiang province of China as the research object.

2. Literature review

The concept of the under-forest economy has a long

history in Chin. The term "under-forest economy" first appeared in the article *Discussion on the Development of Under-forest Economy and the Development of North Medicine Planting*^[4]. At present, the basic theory of under-forest economic theory is still developing and researching.

With this trend, many scholars put forward their views. At the beginning of this century, Anna Lawrence innovatively proposed that training and service institutions related to under-forest economy should be established in forest areas to develop tertiary industry^[5]. Mats and Gaitan-Hernandez took Mexican edible mushroom as the research object and analyzed the sustainability of Mexican edible mushroom industry from the perspective of cultivation technology^[6].

We found that most of the research focused on the forestry economy, and cultivation methods of edible mushrooms, while the research on the industry model of understory edible mushroom was relatively weak. On the basis of previous studies, this paper explored the factors influencing consumers' purchasing behavior of understory edible mushroom in Heilongjiang province

based on SOR model, in order to provide relevant inspiration for the development of understory edible mushroom industry in Heilongjiang province, China.

3. SOR theoretical model and model establishment

3.1. Model theory

The SOR model is a "stimulus-organism-response" model, which has been proved to be used in the study of consumer purchasing behavior^[7,8]. In recent years, Shiyi Hong (2021)^[9] applied the SOR theory to the influence

of the social responsibility of e-commerce companies on consumers' purchase intention. The SOR model explains customer behavior from internal emotion and cognition, and plays an important role in external stimulus and consumer buying behavior. In this paper, we used SOR theory to study the purchasing behavior of understory edible mushroom users in Heilongjiang province.

3.2. Model establishment

Based on SOR theory, we construct the purchasing behavior model of understory edible mushroom in Heilongjiang province, China, as shown in Figure 1.

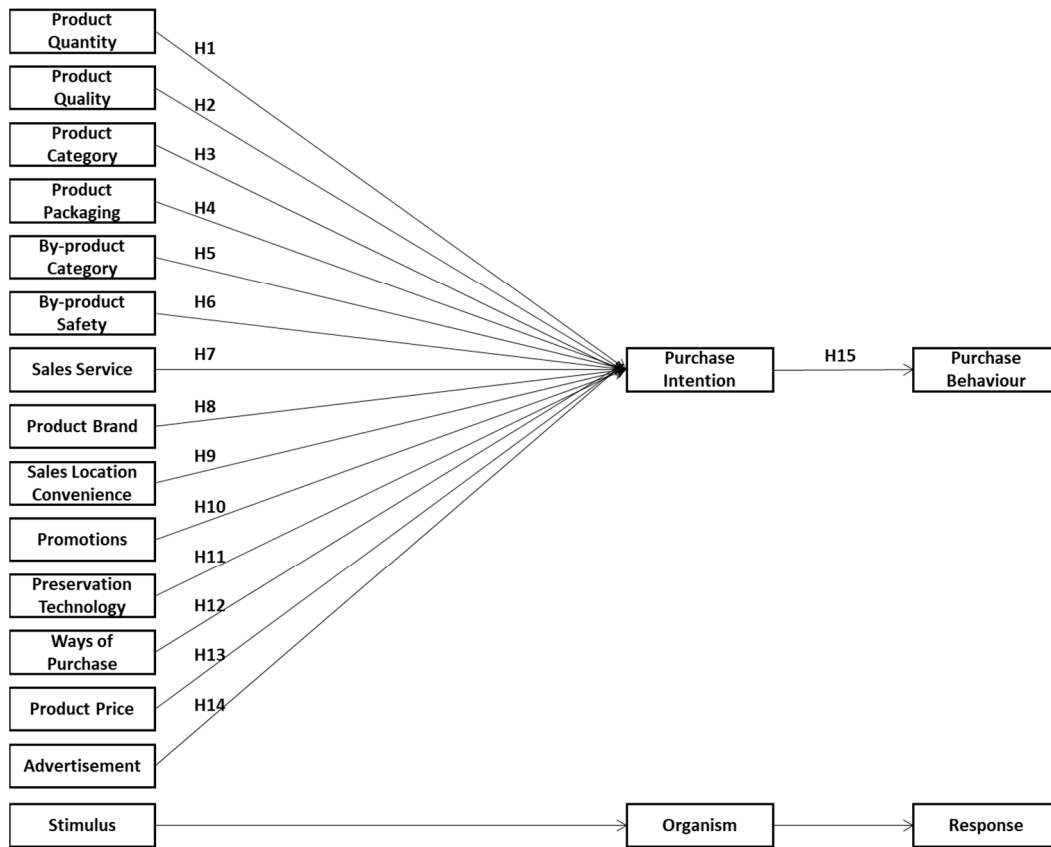


Figure 1. Purchasing behavior model of understory edible mushroom users.

In this model, the independent variable is set as the stimulus part, including the product quantity, product quality, product type, by-product packaging, etc. Set the intermediate variable to purchase intention. And set the

dependent variable as the response part, that is, the purchase behavior of consumers. Among them, literature sources for the selection of stimulus variables are as follows.

Table 1. Literature sources of stimulus variables selection.

Variables	Literature source
Product Quantity	Yanli Li(2019) ^[10]
Product Quality	Supekova(2009) ^[11]
Product Category	
Product Packaging	Jin Ma(2012) ^[12]
By-product Category	Xuemei Cao(2011) ^[13]
By-product Safety	
Sales Service	Xiao Wang, Peng Du, Xiaotong Yang(2021) ^[14]

Product Brand
 Sales Location Convenience
 Promotions
 Preservation Technology
 Ways of Purchase
 Product Price
 Advertisement

Ying Liu (2019)^[15]
 Rongxue Song(2018)^[16]

According to the model established above, make research assumptions, as shown in Table 2.

4. Research assumptions

Table 2. Model assumptions.

No.	Model assumptions
H1	Product quality can significantly affect the purchase intention of users.
H2	Product quality can significantly affect the purchase intention of users.
H3	Product category can significantly affect the purchase intention of users.
H4	Product packaging can significantly affect the purchase intention of users.
H5	The category of by-product can significantly affect the purchase intention of users.
H6	By-product safety quality can significantly affect the purchase intention of users.
H7	Sales service can significantly affect the purchase intention of users.
H8	Product brand can significantly affect the purchase intention of users.
H9	The convenience of sales location can significantly affect the purchase intention of users.
H10	Promotion can significantly affect the purchase intention of users.
H11	Preservation technology can significantly affect the purchase intention of users.
H12	Ways of purchase can significantly affect the purchase intention of users.
H13	Product price can significantly affect the purchase intention of users.
H14	Advertising can significantly affect the purchase intention of users
H15	The purchase intention of users can significantly affect the purchase behavior.

5. Data source

The data for this study came from a questionnaire. And we distributed questionnaires through the online questionnaire platform, and collected a total of 1204 valid questionnaires.

The purpose of the survey is to study the purchasing behavior of Chinese consumers for understory edible mushroom in Heilongjiang Province. Therefore, the subjects of the survey are determined to be Chinese citizens (excluding Hong Kong, Macao and Taiwan).

We adopt quota sampling and simple random sampling to combine the way of sampling survey. The first stage is quota sampling. We determined the sample distribution ratio of 31 provinces based on the population distribution of each province in China. The second stage is simple random sampling. All samples are obtained by random sampling in each sampling box within the layer.

The minimum sample size of this survey was determined according to the following formula.

$$n = \frac{z_{\alpha/2}\sigma}{\Delta^2} \tag{1}$$

Under the condition of 95% confidence level, $z_{\alpha/2} = 1.96$, $\Delta = 0.05$, $\sigma^2 = 0.25$, available $n = 384.16$. We used a combination of quota sampling and random sampling, and set the sampling design effect to 3, so we can get $n = 1152.48$. The effective recovery rate of the questionnaire is assumed to be 80%, and the final sample size is set to 1440. In the actual survey, we handed out 1467 questionnaires, and recovered 1204 valid questionnaires, with an effective rate of 82.07%.

6. Data analysis

6.1. Reliability and validity testing

6.1.1. Reliability test

The goal of reliability testing is to ensure the reliability of the questionnaire. We choose Cronbach's Alpha to test the reliability of each variable, and the results are shown in Table 3.

Table 3. Reliability test.

Cronbach's Alpha Based on Standardized Items	N of Items
0.728	15

According to the results in Table 3, the value of α is greater than 0.7, indicating that the questionnaire has high reliability and passes the reliability test.

6.1.2. Validity test

Validity test refers to the ability of the questionnaire to accurately reflect the real situation of things. We use KMO and Bartlett methods to test the validity of the questionnaire, and the results are shown in Table 4.

Table 4. KMO and Bartlett tests.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.777
Bartlett's Test of Sphericity	Approx. Chi-Square	2204.941
	df	120
	Sig.	0.000

Table 5. Path analysis statistics.

	Path	Estimate	P
Purchase Intention	<- Product Quantity	0.197	0.000
Purchase Intention	<- Product Quality	0.221	0.000
Purchase Intention	<- Product Category	0.245	0.000
Purchase Intention	<- Product Packaging	0.216	0.000
Purchase Intention	<- By-product Category	0.235	0.000
Purchase Intention	<- By-product Safety	0.209	0.000
Purchase Intention	<- Sales Service	0.238	0.000
Purchase Intention	<- Product Brand	0.253	0.000
Purchase Intention	<- Sales Location Convenience	0.213	0.000
Purchase Intention	<- Promotions	0.243	0.000
Purchase Intention	<- Preservation Technology	0.222	0.000
Purchase Intention	<- Ways of Purchase	0.244	0.000
Purchase Intention	<- Product Price	0.209	0.000
Purchase Intention	<- Advertisement	0.202	0.000
Purchasing Behavior	<- Purchase intention	0.897	0.000

It can be seen from Table 5 that all the 15 assumptions made in advance are valid. That is, product quantity, product quality, product type, by-product packaging and other factors will affect the purchase intention of Chinese consumers on the edible mushroom under the forest in Heilongjiang province, thus have an impact on consumer behavior. Secondly, consumers' willingness to purchase edible mushroom under forest will be affected by 14 factors such as product quantity, quality, type, and packaging. Specifically, these factors have a significant positive correlation with consumers' purchase intention.

7. Conclusions and recommendations

To sum up, with the improvement of Chinese people's

living standards, people have a higher pursuit of diet, and edible mushroom with high nutritional value has been recognized by more and more Chinese consumers. Based on SOR theory, this paper conducted a questionnaire survey to explore the influencing factors of Chinese users' purchase of understory edible mushroom in Heilongjiang Province. It is concluded that the main factor that prompts Chinese consumers to purchase behavior is purchase intention.

6.2. Model test

We used structural equation model to test the hypothesis relationships between each variable and judged whether the hypotheses were valid. The relationship between variables is determined by the standardized path coefficient and the corresponding significance probability p value. The path analysis results are shown in Table 5.

Therefore, in order to promote the development of understory edible mushroom industry in Heilongjiang province, China, rural cooperatives should formulate the quality standards of understory edible mushroom products, improve product quality, enrich product

diversity, and appropriately increase the number of products. Production enterprises should beautify product packaging, improve the type of by-products and their safety. And sales enterprises should optimize their sales services, pay attention to the development of cold chain logistics technology, strengthen brand influence, timely organize promotional activities, choose convenient transportation and close to residential areas for product sales. Besides, through e-commerce network platform, improve the convenience of purchasing way of understory edible mushroom, reduce middlemen to reduce product prices, pay attention to the marketing promotion of edible mushroom to promote understory edible mushroom to have a broader consumer market.

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