Research on the Influencing Factors of Consumers' Willingness to Buy Food under the Background of New Media - Based on the Empirical Analysis of Consumers in Beijing

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Abstract. The food safety problems occurred frequently in recent years, and the development of domestic market faces many challenges. It is of great significance to comprehensively understand the current situation of food safety risk perception and find the key factors affecting consumers' purchase intention, and improve the current situation of our food industry based on this. Using the information system, we collected 500 pieces of data about consumers' perception of food safety. Through constructing structural equation model, relevant factors affecting the purchase intention were analyzed, and it was found that consumers' purchase experience, risk attitude and trust level had a significant impact on the domestic food purchase intention. In order to promote the healthy development of our food industry, some suggestions were proposed to the food production enterprises, the government and the consumers.

Keywords: New media; food safety; risk perception; risk communication; purchase intention

1 Introduction

In recent years, food quality and safety has become the focus of attention of society as a whole, but also the work of governments is a top priority. Under the background of today's booming new media, the internet has become the most important channel for the public to understand and communicate about food safety, which brings new opportunities and challenges for food safety. At the same time, issues such as risk communication of food safety information have emerged. Whether factors such as consumers' previous purchasing experience, level of risk perception, and level of trust in food affect public attitudes toward risk and government governance, and how each factor influences people's willingness to purchase, are gradually becoming a major focus of scholarly attention.

New media are effective in disseminating information due to their characteristics such as fast information dissemination and large number of users[1], Julie Henderson et al.[2]revealed that the use of social media is becoming increasingly popular in disseminating information to consumers. Park[3] and Cao[4] found that online reviews have a significant impact on consumers' purchase intentions and purchase decisions. Hsu et al.[5] found that both the

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recommendation of the blogger and the level of trust in the blogger by the consumer influence the consumer's attitude and behavioral intention to shop. Adinolfi et al.[6] argue that food safety risk perception influences consumer choice and purchase intentions. Zhang[7] believes that factors such as the level of scientific knowledge of the public and the controllability of food safety risks affect the depth and breadth of the public's risk perception. Nardi[8] and Rodrigues[9] believe that the government must take appropriate food monitoring actions to increase the likelihood of detecting contaminated food in order to make people more trusting of the government and increase their willingness to buy that food. To reduce the occurrence of food safety problems, Ma et al.[10] proposed a food safety risk early warning method, stating that early warning of food safety can effectively reduce public panic and risk loss.

There is a wealth of research on food safety information risk communication, but most of the relevant literature explores the relationship between the factors using a linear regression approach, which not only requires that the respective variables be independent of each other, but also only deals with the case of linear relationships, which is obviously difficult to achieve in food safety. Therefore, this paper will investigate the key factors influencing consumers' willingness to purchase by developing a structural equation model with reference to the latent and measured variables influencing consumers' risk communication and purchase intentions from existing research findings, and provide reference suggestions for the development of China's food industry based on the final results of the model.

2 Model construction

Structural equation model (SEM) is a statistical method which uses linear equation system to express the relationship between observed variables and latent variables, as well as latent variables, and its essence is a generalized linear model. However, different from the traditional linear regression model, structural equation model can test a number of regression equations at the same time, and these regression equations are quite different from the traditional regression analysis in model form, variable setting, equation hypothesis and other aspects.

Model preparation is the basis and prerequisite for the effective implementation of structural equation model analysis and the theoretical significance of the analysis results. Specifically, model preparation includes four stages: theory establishment, model setting, model recognition and sample survey. In the process of structural equation model analysis, the establishment of correct theory is the first step, and then the hypothesis between variables is presented in the form of structural equation model, and the model variables and parameters are set. In order to test whether the structural equation model can be fitted, it is necessary to identify the model and make corresponding adjustments. Finally, select the survey objects, issue questionnaires and collect relevant data for model analysis.

In this paper, based on the reference study of existing literature, we consider purchase experience, risk perception, environmental perception, and trust level as latent variables and purchase intention as dependent variables, and consider government regulation and risk attitude as mediators. The research hypothesis model of this paper is shown in Figure 1.

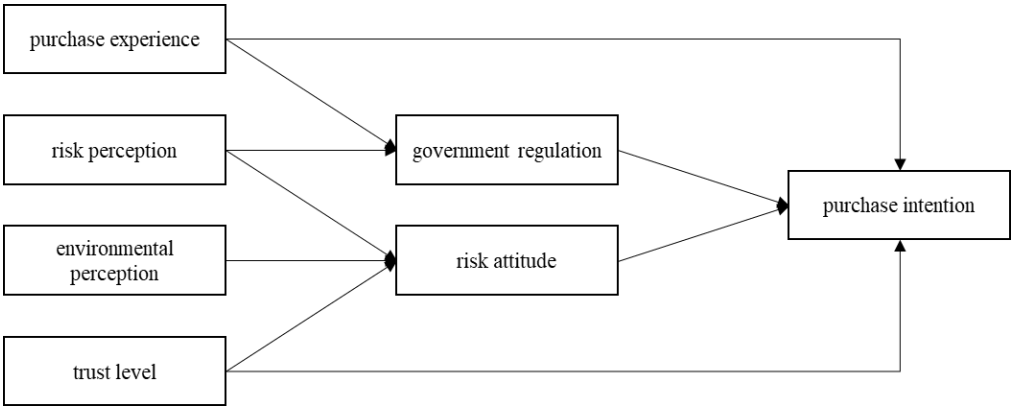

Figure 1. Research hypothesis model

Based on the research hypothesis model in the figure 1 above, the following research hypothesis is proposed in this paper.

H1a: Purchase experience can have a significant positive effect on purchase intention.

H1b: Purchase experience can have a significant positive effect on government regulation.

H2a: Risk perception has a significant positive effect on government regulation.

H2b: Risk perception has a significant positive effect on risk attitude.

H3: Environmental perceptions have a significant positive effect on risk attitudes.

H4a: Trust level has a significant negative effect on risk attitude.

H4b: Trust level has a significant positive effect on purchase intention.

H5a: Government regulation has a significant positive effect on purchase intention.

H5b: Risk attitude has a significant negative effect on purchase intention.

3 Questionnaire design and data collection

3.1 Scale design

To validate the model developed and hypothesized in this paper on the influencing factors of food safety information risk communication and government governance, the latent variables in the model were measured using a questionnaire survey, referring to existing literature, and partially adjusted to take into account the reality and future development of food quality and safety. In order to obtain residents' responses to food safety issues under the background of new media and their perceptions of the effectiveness of the Beijing government's governance in this area, Beijing residents were selected as the respondents of this paper. The first part of the questionnaire is a brief explanation of the purpose of the survey. The second part, the main part of the questionnaire, investigates consumers' perceptions of food safety information and the effectiveness of government governance, including 27 questions in five categories. The

questions were designed using a 5-point Likert scale, in which 1-5 indicate completely disagree, disagree, indistinct, agree, and completely agree, respectively. In the third part, the basic information of the respondents, including gender, age, urban area of residence, duration of residence, household structure, whether there are pregnant women or infants in the household, monthly income, and monthly expenditure costs for food, consisted of 8 questions. The seven latent variables and their measurement questions in the second part of the questionnaire are shown in Table 1.

Table 1. Table of latent variables and their measurement variables

Factors	Codes	Questions
government regulation	Q1	I trust the government's efforts to combat food violations, counterfeiting and the level of punishment
	Q2	I trust the government to provide food safety information to the public
	Q3	I trust the national food quality and safety certification
	Q5	I prefer to rely on the views of the government and experts on food safety issues
	Q20	I am very dissatisfied with the existing food regulatory efforts
	Q24	I think Beijing's future food safety trend is positive
purchase experience	Q6	I am very concerned about the food safety of meat, fruits and vegetables, grains and oils, eggs and milk, etc.
	Q7	I used to shop for food myself
	Q8	I have a lot of experience with the food that I have been shopping for
	Q9	I will try to understand the terminology used in food safety incidents (e.g. melamine)
	Q10	I will discuss food safety issues with people around me
	Q11	I will take the initiative to learn information about food safety
trust level	Q4	I trust food companies to select materials, production techniques, storage and transportation conditions, and preservation measures for food products
	Q12	I often feel that the food I buy does not meet the quality certification required by the state
	Q13	I often feel that the food additives purchased exceed the standard
	Q14	I often feel that the food I buy is genetically modified
risk perception	Q16	I had a food safety incident that made me panic
	Q17	I feel anxious after buying poor quality and spoiled food
	Q18	I feel anxious if I buy genetically modified food
	Q19	I would feel very anxious if I bought food with excessive food additives
risk attitude	Q21	I don't want to buy food with additives
	Q22	I am not willing to buy genetically modified food
	Q23	I don't want to spend energy to buy food, as long as the price is reasonable and the quality is satisfactory
environmental perception	Q25	Food safety issues will affect our next generation
	Q26	The issue of food safety has been well researched
	Q27	Food safety problems can have catastrophic consequences when they occur
purchase intention	Q15	Food safety incidents are frequent and I tend to buy foreign food

In order to make this study more representative and convincing, priority was given to selecting a study group with the same proportion of men and women, those aged 18-55 with strong purchasing power, those living in key urban areas of Beijing, those with the more common household structure of "husband and wife + unmarried children" or "husband and wife + one married child including the third generation", and those resident residents whose monthly expenditure on food is at the normal level of consumption in Beijing and who are aware of food safety and the effectiveness of governance by the Beijing government. "The study also considered residents with a bachelor's degree or higher who had a good understanding of food safety and the effectiveness of the Beijing government. It was also considered that respondents with a bachelor's degree or higher may have a more thorough understanding of the questionnaire and may think more comprehensively about food safety issues, especially when there are pregnant women or infants in the household, so there was a bias in the selection of the study group.

3.2 Reliability and validity analysis

Model verification stage is the stage in which structural equation model software (such as SPSS, Amos, Eqs, Mplus, etc.) is used to fit the model, analyze and test the original hypothesis. This stage includes five stages: data preparation, model fitting, model evaluation, model revision and model interpretation. In order to avoid wrong fitting results, it is necessary to test whether the data meets the hypothesis conditions, after which maximum likelihood, generalized least square, iterative method (IM) and other Iterative methods conduct model fitting. If the fitting effect of the model is poor, some parameters should be released or fixed to improve the fitting degree. When the fitting effect is good, summarize the model analysis results, explain the verified and unverified parts in the initial model setting, and complete the final analysis report.

The reliability test of this paper was conducted using Cronbach's alpha value, and the SPSS24.0 software was used to test the reliability of the measurement scale of each latent variable, and the overall reliability test value of the scale Alpha = 0.848, which indicates that the stability and reliability of the whole total scale of the questionnaire is high. In order to improve the reliability of the scale, questions Q20, Q4, Q23, and Q26 with relatively low Alpha were temporarily deleted, and the reliability of each latent variable was re-tested after the deletion, and the overall Alpha value of the scale was 0.852. The overall reliability of the scale increased, and the reliability of the latent variables corresponding to the deleted questions were significantly improved, indicating that The reliability of the questionnaire was good.

For the validity test, it was carried out mainly for all questions except Q15, which represents purchase intention. Exploratory factor analysis was first conducted using SPSS version 24.0 for testing the suitability of the sample data for factor analysis, and the results of the tests are shown in Table 2.

Table 2. KMO and Bartlett's sphericity test

KMO value		0.869
Bartlett's sphericity test	Approximate cardinality	3632.256
	Df value	231
	Sig value	0.000

From Table 2, we can conclude that the KMO value is 0.869 and the Sig value in Bartlett's spherical test is 0.00, which is high significance, indicating that the sample data is suitable for factor analysis. Next, principal component analysis was selected for factor analysis, and the results obtained divided the questionnaire questions into five categories, which are: express Q1, Q2, Q3, Q5, Q24 as government regulation, Q6, Q7, Q9, Q10, Q11 as purchasing experience, Q16, Q17, Q19, Q25, Q27 as risk perception, Q12, Q13, Q14, Q15 Q12, Q13, Q14, Q15 are expressed as trust level, Q21, Q22 are expressed as risk attitude.

3.3 Model Correction

The unreasonable aspects of the above model were improved through reliability and validity analyses, which led to the adjustment of the initial research hypothesis model to Figure 2.

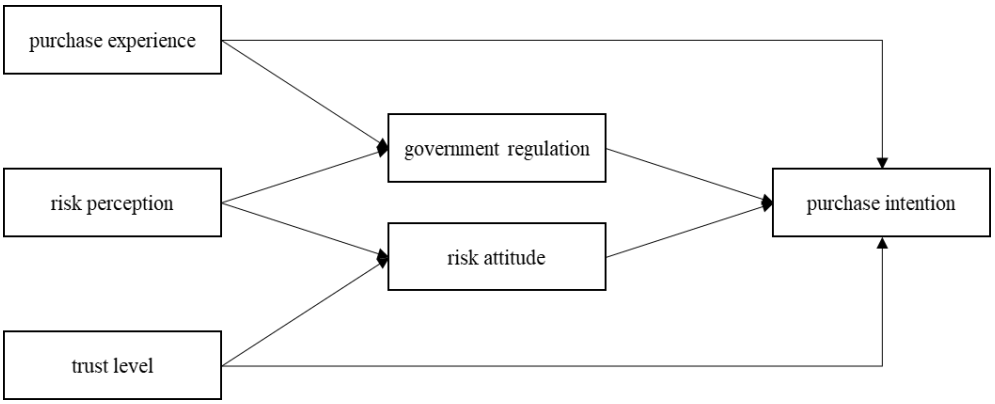

Figure 2. Modified research hypothesis model

At the same time, the analysis of the specific questionnaire questions indicating the variables of the above model revealed that the results of each question indicated non-homogeneous tendencies of the respondents. In particular, Q15, which indicates "willingness to buy", is "tendency to buy foreign food products", and the higher the quantitative answer chosen by the respondents, the less willing they are to buy domestic products. Considering that the other questions in the questionnaire were mainly designed for domestic products, the higher the magnitude of the Q15 answer, the lower the willingness to buy. Therefore, the original theoretical hypothesis is substituted into the model according to the directionality of the questionnaire questions, and the transformation will be reflected as follows:

H1a: Purchase experience has a significant negative effect on purchase intention.

H1b: Purchase experience has a significant positive effect on government regulation.

H2a: Risk perception has a significant negative effect on government regulation.

H2b: Risk perception has a significant positive effect on risk attitude.

H4a: Level of trust has a significant positive effect on risk attitudes.

H4b: The degree of trust has a significant positive effect on purchase intention.

H5a: Government regulation has a significant negative effect on purchase intention.

H5b: Risk attitude has a significant positive effect on purchase intention.

The structural equation model of the modified research hypothesis model obtained using the structural equation analysis software Amos is shown in Figure 3.

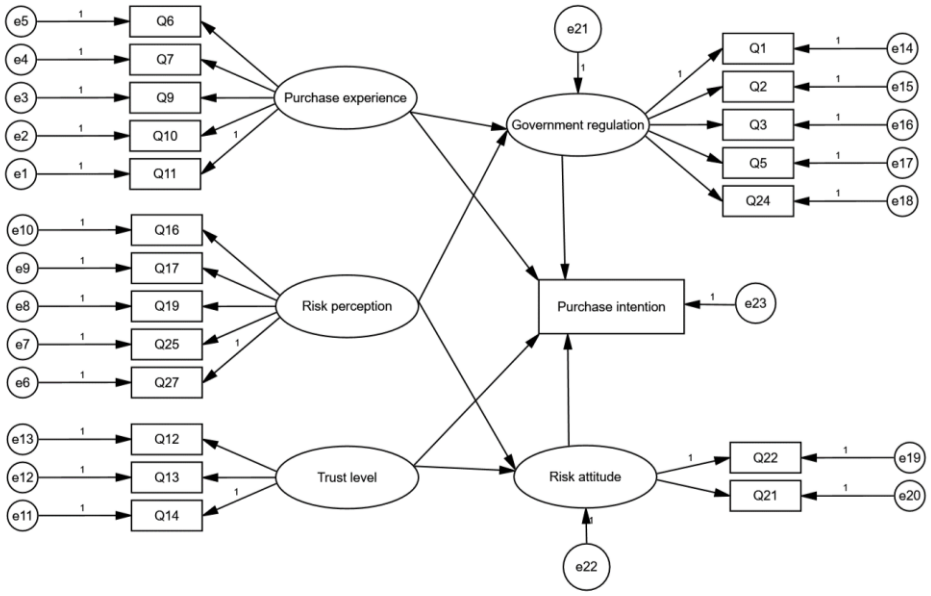

Figure 3. Structural equation diagram of the modified model

4 Data Analysis

4.1 Goodness of fit test

Combining the results of the above reliability and validity tests on the questionnaire questions, Amos.22.0.0 was used to test the goodness of fit of the structural equation model constructed in this paper, and the results of each test index are shown in Table 3.

Table 3. Goodness of fit test results

Goodness of fit test index	Common evaluation criteria		Actual Fitted Value
	Acceptable	Good	
χ^2/df	3.0-5.0	＜3.0	0.861
GFI	0.7-0.9	＞0.9	0.976
RMSEA	0.05-0.08	＜0.05	0.000
NFI	0.7-0.9	＞0.9	1.000
CFI	0.7-0.9	＞0.9	1.000

From Table 3, it can be seen that all the goodness-of-fit test indices of the model meet the good criteria and the model fits well. In addition, the structural equation model corresponds to a p-value of 0.893, which indicates that the null hypothesis is not rejected and cannot be considered as assuming incorrect model setting.

4.2 Path analysis

Path analysis of the modified structural equation model was performed using Amos software to obtain standardized path coefficients and p-values among the variables, as shown in Table 4.

Table 4 Modified structural equation model path test results

Paths	Standard path coefficient	P-value	Significance	Hypothesis testing
Government regulation ← Purchase experience	0.778	0.000	Extremely significant	Accept H1b
Government regulation ← Risk perception	-0.373	0.003	Significant	Accept H2a
Risk attitude ← Risk perception	0.858	0.000	Extremely significant	Accept H2b
Risk attitude ← Trust level	0.087	0.093	A little bit significant	Accept H4a
Purchase intention ← Government regulation	0.162	0.340	Not significant	Reject H5a
Purchase intention ← Risk attitude	0.259	0.025	Significant	Accept H5b
Purchase intention ← Trust level	0.900	0.000	Extremely significant	Accept H4b
Purchase intention ← Purchase experience	-0.337	0.092	A little bit significant	Accept H1a

From the test results in Table 4 above, except for the hypothesis corresponding to H5a, which cannot reject H0, all the other hypotheses can reject H0 of the corresponding hypotheses according to their significance, and the positive and negative values of the corresponding standard path coefficients remain consistent with the positive and negative effects of the previous hypotheses. The corresponding hypothetical model after correction is shown in Figure 4.

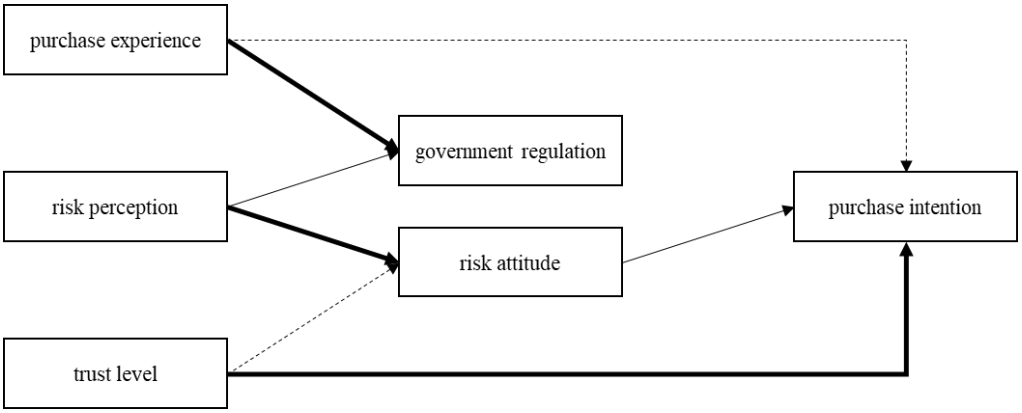

Figure 4. Final result model

5 Conclusion

From the results of the above analysis, it can be seen that there are some differences between the final results and the initially proposed model. Based on the results of the model validation, we can conclude the following.

First, risk perception has a significant negative effect on government regulation. As can be seen from the final model, the higher the level of risk perception of the public, the more sensitive they are to risk, the more worried they are about food safety issues, and thus the more distrustful they are of the government, believing that the level of government regulation is declining. In fact, government regulation plays an extremely important role in the public's communication of food safety risks, and local governments should be actively involved in food safety supervision and management, and the government must take primary responsibility for food safety governance. Consumers are unable to judge the quality of food and the cost of individual testing is high, so there is a greater need for public supervision of food by the government, which can reduce the cost of testing and at the same time provide relief to consumers.

Second, the positive effect of trust level on risk attitude is borderline significant. When people believe that the food they buy is problematic, i.e., when they do not trust the quality of the food, the less willing they are to buy unhealthy products. The information asymmetry that exists between consumers and food producers is one of the major factors contributing to the frequency of food safety problems[11], therefore, food producers need to take effective measures to enhance good interaction with consumers to restore their confidence in food safety and change their negative attitudes toward food.

Third, the negative effect of purchase experience on purchase intention is borderline significant. According to the final results of the model, it can be seen that the more experienced the public is in buying, the less willing they are to buy domestic food. The same side effect also indicates that Beijing residents' perception of domestic food is declining. This finding brings a thought for domestic food manufacturers, who must focus on food safety production issues, improve the quality of their products, and win the trust of consumers, thus

increasing their willingness to buy and open up the market.

Based on the above findings, we find that the current situation of food safety in China is not optimistic, especially after a period of time experiencing the impact of food safety incidents, people adopt an avoidant attitude towards food safety risks, consumers have a high level of risk perception, a low level of trust in the government and production companies, and a low willingness to purchase domestic food products. In this regard, the government, enterprises, society and consumers, all subjects need to take measures and work together in many ways to improve food quality, expand the domestic food market, restore consumers' trust and sense of control, improve the current situation of food development in China, and together make a positive contribution to the construction of the future of the food industry.

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