

# Consumers' valuation for Food Traceability in China: Does Perceived Value Matter?

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**Abstract.** Food safety, a pressing concern in China, is addressed in this paper by proposing a comprehensive framework based on the affect–behavior–cognition theory. The framework aims to analyze the interplay among information asymmetry, product knowledge, consumer perceived value, and purchase intention. Specifically, the study explores the mediating role of perceived value in the relationships between information asymmetry, product knowledge, and purchase intention. Data were collected through a survey, yielding 238 usable responses. Structural equation modeling was employed to analyze the hypothesized relationships. Findings reveal that both information asymmetry and product knowledge influence consumer perceived value, which, in turn, positively affects purchase intention, with perceived value serving as a mediator. This study elucidates the influence of customer attitudes on their inclination to buy traceable food, offering practical insights for producers and marketers to formulate effective strategies. These strategies aim to foster sustainable growth in the food industry.

**Keywords:** Information asymmetry, Product knowledge, Perceived value, Purchase intention, Affect–behavior–cognition theory

## 1 Introduction

Food safety currently ranks as a paramount global concern (Shafieizadeh et al., 2023)<sup>[1]</sup>. Nevertheless, in numerous economies, the concept of ‘food safety’ remains obscured, and issues are often disregarded, potentially resulting in significant incidents within the global food industry. With the expanding global population, there is a corresponding surge in food demand, resulting in heightened prevalence of unsafe food practices. Consequently, the food industry faces a severe crisis of consumer confidence. Given its focus on the origin and production methods of food, food traceability holds promise as a means of furnishing consumers with pertinent information (Yuan et al., 2020)<sup>[2]</sup>. This information dissemination could mitigate unhealthy practices, lower the incidence of food fraud, and enhance overall food safety.

China presents a compelling subject of study owing to its progressive adoption of more stringent food safety standards. However, China has experienced several food safety crises in recent years, such as the Sanlu milk powder scandal, the contamination of steamed buns, and the presence of powerful pesticides in cowpeas. As a result, trust in food production methods

and the accuracy of labeling has been significantly eroded (Wongprawmas et al., 2015) <sup>[3]</sup>. To address these issues, the Chinese government began implementing meat and vegetable traceability systems in 2010. However, doubts persist regarding the efficacy of these systems within the domestic market. Moreover, unlike many developed countries, China's food safety regulation is decentralized across multiple governmental bodies, leading to potential regulatory redundancies and disparities.

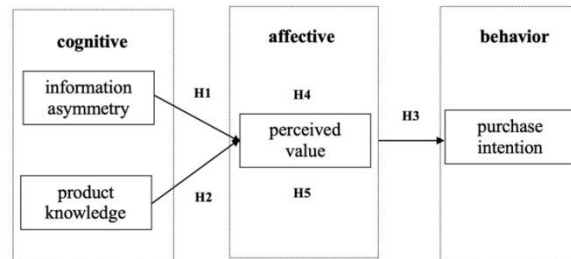
Thus, China currently lacks a robust food safety and quality assurance framework that instills confidence in consumers. Policymakers can develop and enforce more effective food safety regulations and restore and bolster consumer confidence, with the assistance of an evaluation of Chinese consumers' perception of the value of traceable food products. To determine the preferences and purchase intentions of Chinese consumers regarding seafood, based on the affect-behavior-cognition (ABC) theory, this study aims to investigate customers' attitudes towards seafood traceability through a qualitative approach.

This study contributes in three ways to the evolving literature within this field. First, we look at customers' preferences for traceable seafood products, which is different from most previous research that concentrates on traceable pork products. Second, our study adds to the growing body of literature regarding the importance of traceability information for Chinese consumers when making food choices. China's food traceability program can benefit from timely information provided by examining consumer value for marine goods that can be traced. Moreover, this study contributes to the literature by exploring the potential effects of information asymmetry and consumer product knowledge on perceived value and purchase intention regarding traceable food. An understanding of traceable products from the consumer standpoint can inform recommendations for the Chinese government or industry to focus on enhancing food safety standards progressively through targeted development strategies.

## **2 Theoretical framework and research hypotheses**

### **2.1 Affect-Behavior-Cognition theory**

The Affect-Behavior-Cognition (ABC) theory is a conceptual framework that explains attitudes in consumer behavior (Zepeda and Deal, 2009) <sup>[4]</sup>. The ABC model of attitude has undergone adaptation to improve its predictive capacity for consumer behavior (Hsu and Lin, 2016) <sup>[5]</sup>. Affect pertains to the emotional reactions (Kwon and Vogt, 2010) <sup>[6]</sup> and subjective feelings individuals harbor toward specific stimuli encountered in their daily experiences. Cognition encompasses consumers' cognitive processes and their intentional comprehension of attitudes and objects (Kwon and Vogt, 2010) <sup>[6]</sup>, culminating in the development of knowledge, awareness, opinions, perceptions, and beliefs. This study suggests a food traceability mechanism based on the ABC framework. It takes into account information asymmetry and product knowledge as cognitive dimensions, perceived value as the cognition dimension, and purchase intention as the behavioral dimension (Figure 1).



**Fig. 1.** The proposed model

## 2.2 Research hypotheses

Information asymmetry occurs when there is an imbalance of knowledge between two parties involved in market transactions, resulting from disparities in their comprehension of important details. In other words, one side possesses a greater amount of information compared to the other party. However, their level of control is reduced. Information asymmetry arises from a difference in knowledge between buyers and sellers. It denotes a scenario wherein one party in a market transaction holds more information than the other (Bergh et al., 2019)<sup>[7]</sup>. According to Dzwolak (2016)<sup>[8]</sup>, food traceability networks play a crucial role in ensuring safety across regions, enhancing consumer confidence in food safety, and mitigating information asymmetry in sustainable agricultural methods. These networks are extensively deployed and serve a crucial function in maintaining confidence in food safety in developed nations.

The accumulation of product category information and stored rules in a consumer's memory constitutes product knowledge. It serves as a significant determinant shaping consumers' attitudes towards adopting pro-environmental purchasing behaviors (Cho et al., 2013)<sup>[9]</sup>. Product knowledge refers to a series of information related to a product, including its design, production, packaging, features, performance, price, value, maintenance, and upkeep. Xu (2016) indicated that customer knowledge refers to the product knowledge that consumers believe they possess<sup>[10]</sup>. The more knowledge consumers believe they have, the more confident their decision-making becomes, leading to higher purchasing intentions.

Moreover, perceived value, encompasses the assessment of whether a product's attributes align with the consumer's needs and satisfaction within a specific context. Consumers' perceived value of traceable foods pertain to the health advantages they associate with traceable foods when making a purchase, considering the time, effort, and expense they invest in acquiring and using these food products (Liu, 2008)<sup>[11]</sup>.

Perceived value plays a crucial mediating role between product knowledge and purchase intention. As consumers acquire deeper product knowledge, they gain a more comprehensive understanding of a product's features, benefits, and overall value proposition. This heightened awareness directly influences their perception of the value offered by the product. When consumers perceive greater value in a product relative to its costs, they are more likely to develop favorable attitudes towards it and express stronger purchase intentions. Perceived value acts as a cognitive bridge, translating consumers' product knowledge into assessments of value, which, in turn, shape their purchase intentions. By recognizing the mediating role of perceived value, marketers can focus on enhancing both product knowledge and perceived

value perceptions among consumers, ultimately driving purchase intentions and fostering long-term brand loyalty. Hence, this study proposed the subsequent hypothesis:

Hypothesis 1. Information asymmetry relates positively with perceived value.

Hypothesis 2. Product knowledge relates positively with perceived value.

Hypothesis 3. Purchase intention is positively associated with perceived value.

Hypothesis 4. The effect of product knowledge on purchase intention is moderated by perceived value.

Hypothesis 5. The effect of information asymmetry on purchase intention is moderated by perceived value.

### 3 Research design

The construct measuring scales employed in the study model were developed from existing literature. Several items were changed considering the context of our research. Reflective constructs were employed to assess all variables in the study, utilizing a 5-point Likert-type scale spanning from 1 to 5 (indicating strongly agree to strongly disagree) to evaluate all questions. This study selected participants who consume Chinese food, employing purposive sampling to recruit individuals aged 45 or younger with prior experience purchasing items featuring a food traceability label. This age group was targeted due to their higher likelihood of having such experiences. Active participation in social media and familiarity with the corresponding food traceability software. The fieldwork was carried out between March 7, 2023, and April 27, 2023, encompassing the distribution of 238 copies of the study questionnaire that investigates the opinions of young individuals. Table 1 displays the sample demographics.

**Table 1.** Demographics of the sample.

Gender	(%)	Education	(%)	Age	(%)
Male	27.6	Junior secondary and below	6	18-25	83%
Female	72.3	High School	9.8	25-35	4.60%
		Junior college	12.2	36-45	8.40%
		Bachelor	68	>45	4.00%
		Master	0.9		
		PHD	1.8		

### 4 Data analysis and research results

To validate the theoretical framework, we utilized a two-step structural equation modeling approach. This approach focused on analyzing two separate models: the measurement model, which assessed reliability and validity, and the structural model, which tested hypotheses.

Initially, we evaluated the reliability and validity of the measurement model using the two-step methodology. The subsequent phase involved scrutinizing the structural model to test the

study hypotheses. Convergent and discriminant validity were utilized to evaluate the measurement model. To assess convergent validity, this study examined Cronbach's alpha, factor loadings, and average variance explained (AVE) values (Chin, 1998) <sup>[12]</sup>. The results are presented in Table 2. All Cronbach's alpha values exceeded 0.7, indicating satisfactory internal consistency for the measures employed in the study. Moreover, it is worth noting that the factor loadings for each item exceeded the threshold of 0.7, demonstrating the items' strong association with their respective constructs. Additionally, all AVE values exceeded 0.5, indicating that a substantial proportion of the variance in the constructs was captured by their corresponding indicators. These findings collectively support satisfactory convergent validity (Chin, 1998) <sup>[12]</sup>. Discriminant validity was assessed by comparing the inter-construct correlations, as per the guidelines provided by Chin (1998) <sup>[12]</sup>, with the square root of each AVE, as shown in Table 3. The results indicate successful establishment of discriminant validity, with the square root of AVE surpassing the inter-construct correlations. Thus, the measurement model itself displays a good level of fit.

**Table 2.** Measurement model assessment.

Scale items	Loadings
<b>Information Asymmetry (IA) (Alpha=0.895; CR= 0.905; AVE=0.765)</b>	
I am able to correctly evaluate the information I obtain when purchasing traceable seafood from Zhanjiang	0.752
I can see enough information when purchasing traceable seafood from Zhanjiang	0.902
There are enough channels for me to obtain information when purchasing traceable seafood from Zhanjiang.	0.881
I can get the information I want when buying traceable seafood from Zhanjiang	0.952
<b>Product knowledge (PK) (Alpha=0.9575; CR=0.962; AVE=0.818)</b>	
I think I know a lot about traceable seafood in Zhanjiang	0.908
When others ask me for advice, I can provide a lot of Zhanjiang traceable seafood purchasing advice.	0.881
I have very rich experience in purchasing traceable seafood in Zhanjiang	0.872
I know very well the basic functions of traceable seafood in Zhanjiang	0.953
I feel like I fit in with the other customers when interacting with him/her.	0.884
I understand the difference in services between Zhanjiang seafood and Zhanjiang traceable seafood	0.925
I know very well the price difference between Zhanjiang seafood and Zhanjiang traceable seafood	0.908
<b>Perceived value (PV) (Alpha=0.900; CR=0.916; AVE=0.771)</b>	
The value provided by Zhanjiang traceable seafood is higher than my expected value	0.833
I am always satisfied with the services provided by Zhanjiang Traceable Seafood	0.903
Zhanjiang's traceable seafood can meet my needs very well	0.830
All in all, I think Zhanjiang traceable seafood offers great value	0.941
<b>Purchase intention (PI) (Alpha=0.714; CR=0.758; AVE=0.640)</b>	
Overall, buying substandard Zhanjiang traceable seafood will waste my time	0.701
I am worried that the traceable seafood purchased from Zhanjiang will be harmful to my health.	0.899
Generally speaking, buying unhealthy Zhanjiang traceable seafood affects my mood	0.811

**Table 3.** Fornell-Larcker Criterion

	1	2	3	4	5
<b>1 Product knowledge</b>	<b>0.904</b>				
<b>2 Information Asymmetry</b>	0.742	<b>0.875</b>			
<b>3 Perceived value</b>	0.740	0.647	<b>0.878</b>		
<b>4 Purchase intention</b>	0.692	0.465	0.701	<b>0.800</b>	

The structural model estimation involved 5,000 subsamples and utilized bias-corrected and accelerated (BCa) bootstrapping. Predictive relevance required values greater than 0 (Hair et al., 2020) [13]. R<sup>2</sup> values ranging from 0.492 to 0.503 indicated substantial explained variance (Hair et al., 2020) [13]. As shown in Table 4, H1 and H2 demonstrated positive associations between product knowledge ( $\beta=0.332$ ,  $p < 0.01$ ) and information asymmetry ( $\beta=0.485$ ,  $p < 0.01$ ) with perceived value. Additionally, perceived value positively correlated with purchase intention, supporting H3 ( $\beta=0.701$ ,  $p < 0.01$ ). The mediation analysis indicated a positive association between product knowledge and purchase intention, mediated by perceived value, thereby supporting H4 ( $\beta=0.233$ ,  $p < 0.05$ ). These findings suggest a significant relationship between product knowledge and purchase intention, influenced by perceived value, supporting H5 ( $\beta=0.340$ ,  $p < 0.01$ ). Thus, this study confirms the presence of a mediation relationship.

**Table 4.** The result of the structural model

Hypotheses	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STD EV )	P Values	
<b>Direct relationship</b>						
H1	Product knowledge -> Perceived value	0.332	0.324	0.118	2.809	0.005
H2	Information Asymmetry -> Perceived value	0.485	0.497	0.128	3.800	0.000
H3	Perceived value -> Purchase intention	0.701	0.709	0.075	9.376	0.000
<b>Indirect relationship</b>						
H4	Product knowledge -> Perceived value -> Purchase intention	0.233	0.232	0.093	2.513	0.012
H5	Information Asymmetry -> Perceived value -> Purchase intention	0.340	0.352	0.095	3.576	0.000

## 5 Discussion

Our study aimed to explore the relationship between information asymmetry, product knowledge, perceived value, and purchase intention. Findings supported H1, indicating a positive link between information asymmetry and perceived value. This suggests that consumers, when faced with information gaps, rely more on perceived value in evaluating product desirability, consistent with previous research emphasizing perceived value's role in mitigating information gaps in decision-making. Additionally, H2 was supported, showing a positive correlation between product knowledge and perceived value. This underscores the

importance of providing consumers with adequate product information to enhance perceived value and drive purchase intentions (Wikoff et al., 2012)<sup>[14]</sup>. As expected, H3 confirmed a positive association between perceived value and purchase intention, consistent with prior research highlighting perceived value's significance in shaping consumer behaviors (Van Rijswijk and Frewer, 2008)<sup>[15]</sup>. Moreover, our results supported H4 and H5, indicating that both product knowledge and information asymmetry effects on purchase intention are moderated by perceived value.

## 6. Conclusion

In summary, our research enhances comprehension of the intricate relationships among information asymmetry, product knowledge, perceived value, and purchase intention. The results underscore the pivotal function of perceived value as a mediator in influencing consumer decision-making, offering insights for marketers seeking to devise strategies that elevate consumer perceptions and stimulate purchase intentions.

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