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Building trust in sustainable food systems: Chinese consumers' food safety perceptions and willingness to pay

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Persistent food safety incidents and public distrust present significant challenges to China's food system, prompting critical inquiry into how consumers perceive food safety and how these perceptions shape their willingness to pay for safer products. This paper synthesizes existing literature on Chinese consumers' food safety perceptions and willingness to pay across food categories. Findings consistently indicate high levels of concern regarding food safety and quality. Health protection, viewed as a form of health insurance, along with environmental benefits and the absence of pesticides or chemical residues, are primary drivers of demand for safe food. Despite limited knowledge about certified products, consumers generally perceive them as safer and of higher quality than conventional alternatives and are willing to pay a modest premium, though this premium remains relatively low. Income is the strongest determinant of willingness to pay, followed by trust in certified foods, education, age, perceived safety risks, price sensitivity, gender, and knowledge. These insights inform policymakers, producers, and retailers in designing effective food safety regulations, credible certification schemes, and market strategies aligned with consumer behavior.

KEYWORDS

food safety perceptions, willingness to pay, consumer trust, food certification, risk perception

1 Introduction

Consumers generally express their concerns on food safety. According to [Henson and Traill \(1993\)](#), food safety is the inverse of food risk and can be expressed as the probability of not suffering some hazard from consuming a specific food. In general, consumers concerns are based on several risk factors like natural contaminants (e.g., mycotoxins, heavy metals), agrochemicals (e.g., pesticides, nitrate), veterinary drugs (e.g., antibiotics), and packaging materials ([Ergönül, 2013](#)). Food safety has become a matter of growing concern across the world, however, few countries have experienced challenges as acute and persistent as those observed in China. In recent years, a series of high-profile food safety scandals has profoundly reshaped consumer attitudes, leading to heightened public scrutiny and a growing demand for safer, more trustworthy food products ([Cai et al., 2013](#); [Ortega et al., 2011](#); [Ren and An, 2009](#)). The Chinese food system, once largely dependent on informal markets and weakly regulated production structures, has undergone rapid modernization. Nevertheless, this transformation has been accompanied by persistent challenges, including inconsistent regulatory enforcement,

information asymmetries, and widespread consumer distrust (Kang, 2019; Liu et al., 2020; Wang et al., 2025).

In particular, the 2008 “Sanlu melamine-contaminated milk powder” incident stands as a landmark scandal that fundamentally undermined public confidence in food governance. The scandal, which involved the deliberate adulteration of infant formula with industrial chemicals to falsify protein content, led to over 300,000 cases of illness and six infant deaths, triggering outrage across the country (Zhou and Wang, 2011). Since then, consumers have become increasingly wary of food quality, especially in high-risk categories such as dairy, meat, and fresh produce. Subsequent food safety violations, ranging from recycled “gutter oil” to pesticide-laden vegetables and contaminated pork, have further entrenched public skepticism and anxiety.

Food safety has consistently ranked among the most pressing public concern in China. A national survey conducted in 2011 revealed that food safety surpassed even environmental pollution and traffic accidents in terms of perceived threat to daily life (Lam et al., 2013). This concern has not diminished over time, multiple studies confirm that Chinese consumers remain highly sensitive to food safety risks and are increasingly willing to pay price premiums for food perceived as safer, healthier, or more traceable (Liu et al., 2013; Ortega et al., 2011; Xu et al., 2019).

Against this backdrop, understanding consumer behavior toward food safety is not only academically relevant but also critically important for informing public policy design, certification schemes, and market-based interventions. Producers, retailers, and policymakers face growing pressure to restore consumer confidence through enhanced transparency, traceability, and stricter quality control mechanisms. In response, a range of institutional and technological solutions—such as organic certification, traceable supply chains, and blockchain-enabled food information systems—have gained increasing traction (Duan et al., 2024; Duong et al., 2024; Hema, 2024; Pakseresht et al., 2024). However, the effectiveness of these initiatives ultimately depends on consumer awareness, trust, and willingness to pay (WTP) (Wang et al., 2022; Yuan et al., 2024).

Despite the growth in empirical research on food safety and consumer preferences in China, several gaps remain. Most existing studies are limited to specific food types, such as dairy or pork, and tend to adopt a fragmented perspective that does not allow for generalization across food categories. There is also limited synthesis of findings across regions, age groups, and socio-economic backgrounds, despite the diversity of China’s population and market environments. Additionally, many studies examine behavioral intentions or risk perceptions in isolation, failing to capture the complex interactions among risk perception, trust, labeling mechanisms, and actual purchasing behavior (Huang et al., 2021; Wang et al., 2022).

Despite the existence of prior review studies, most notably Liu et al. (2013, 2014), which provided an early synthesis of Chinese consumers’ attitudes toward safe food, the literature has evolved substantially over the past decade. Since 2015, new empirical evidence has emerged across diverse food categories, including seafood, dairy, organic produce, and traceable meat, employing advanced econometric models such as choice experiments, mixed logit models, and experimental auctions. However, recent findings remain fragmented across product types, regions, and methodological approaches, limiting cross-category generalization and theoretical integration. Moreover, emerging themes, such as digital traceability systems, blockchain-enabled transparency, evolving retail channels, and shifting trust dynamics, have not yet been systematically integrated into an updated synthesis.

Therefore, rather than filling an absence of reviews, this study provides an updated and integrative scoping review that (1) consolidates post-2008 and especially post-2015 empirical evidence, (2) compares determinants of food safety perception and WTP across food categories, and (3) synthesizes socio-demographic, psychological, and institutional factors within a unified analytical framework. By doing so, the review advances beyond earlier syntheses and reflects the transformed regulatory and technological landscape of China’s contemporary food system.

Building on the identified gaps, this review aims to provide an updated and integrative synthesis of how Chinese consumers perceive food safety and how these perceptions translate into WTP for safe food products. Specifically, the review is structured around three interrelated analytical dimensions. First, it explores the influence of consumers’ demographic characteristics, such as income, education level, age, and gender, on food safety perceptions and risk sensitivity. These characteristics are essential for identifying population segments that are particularly vulnerable, highly concerned, or comparatively less informed about food-related risks.

Second, the review examines consumers’ attitudes and behavioral tendencies toward safe food, including their motivations for choosing certified or traceable products, the barriers that prevent them from doing so, and the extent of their knowledge about food labels and certifications. It also considers the purchasing channels consumers prefer when seeking safe food and the price premiums they are willing to pay for products perceived as safer.

Third, the analysis delves into how personal factors such as health consciousness, previous experiences with food safety incidents, family structure, and levels of trust in the food system shape consumers’ willingness to buy safe food. By incorporating both psychological and experiential dimensions, the review offers a more nuanced understanding of what drives or inhibits purchasing behavior.

This review is guided by the following research questions, which correspond to the three analytical dimensions outlined above:

RQ1: How do socio-demographic characteristics (income, education, age, gender, and family structure) influence Chinese consumers’ perception of food safety and their WTP for safe food products?

RQ2: What motivations and barriers shape consumer purchasing behavior toward safe food, and how do knowledge, labeling systems, purchasing channels, and price premiums affect market participation?

RQ3: How do psychological and experiential factors, such as health consciousness, prior exposure to food safety incidents, and trust in certification and regulatory institutions, interact with demographic characteristics to determine purchasing intentions and WTP?

By structuring the review around these interrelated questions, the study provides a coherent analytical framework that integrates demographic, behavioral, and institutional determinants of food safety behavior in China.

2 Research method

2.1 Scoping review approach

To explore how Chinese consumers perceive food safety and what factors influence their WTP for safe food, we adopted a scoping review approach. A scoping review was considered particularly appropriate given the breadth, heterogeneity, and fragmentation of the existing literature on food safety perception and consumer behavior in China. Unlike systematic reviews that focus on narrowly defined research questions and comparable study designs, scoping reviews are well suited to mapping diverse evidence, clarifying key concepts, and identifying dominant themes and knowledge gaps across a wide range of food categories, methodological approaches, and population groups (Grønstad, 2025; Khalil et al., 2025). Accordingly, this approach enables a comprehensive synthesis of how socio-demographic characteristics, food safety perceptions, and purchasing behavior are interconnected in the Chinese context.

2.2 Search strategy

A systematic literature search was performed to identify studies published between January 2008 and December 2025, encompassing both English and Chinese language literature. The search was initially conducted in June 2025 and updated in January 2026 to ensure currency.

The following electronic databases were searched:

English-language literature: Scopus and ScienceDirect.

Chinese-language literature: China National Knowledge Infrastructure (CNKI), the largest Chinese academic database covering journal articles, dissertations, conference proceedings, and government documents (Liu et al., 2013).

Web of Science was not included in this review due to its substantial overlap with Scopus in the field of consumer behavior research. Previous studies have shown that the vast majority of journals indexed in Web of Science are also covered by Scopus (Singh et al., 2021), and adding Web of Science would contribute minimal unique coverage while increasing screening burden.

To ensure the retrieval of highly relevant papers, searches were restricted to documents containing the predefined keywords in the title, abstract, or keywords fields.

For English-language databases, the following Boolean search string was used, adapted as necessary for each database's syntax:

((“food safety” OR “safe food” OR “organic food” OR “green food” OR “traceable food”) AND (“consumer perception” OR “risk perception” OR “attitude”) AND (“willingness to pay” OR “WTP”) AND (China OR Chinese))

For the CNKI database, equivalent search terms were used in Chinese. The search was limited to peer-reviewed journal articles. Given that Chinese academic articles often place core variables in different fields, the search logic was adapted to CNKI's syntax as follows:

Title: “organic food” OR “green food” OR “traceable food” OR “food safety” AND Abstract: “consumers’ willingness to pay.”

2.3 Inclusion and exclusion criteria

Studies were included if they met the following criteria, framed according to the PCC (Population, Concept, Context) framework for scoping reviews:

Population: Chinese consumers (including studies conducted in China or with Chinese samples abroad).

Concept: Empirical research on consumers’ perceptions of food safety, trust in food safety certifications or labels, and/or WTP for safe/certified food. Both quantitative and qualitative studies were considered.

Context: Any food product category (e.g., dairy, meat, vegetables, organic food, traceable food) and any geographical region within China.

Source type: Peer-reviewed journal articles published in English or Chinese between 2008 and 2025.

Studies were excluded if they: (1) focused solely on food safety technology, regulation, or supply chain without consumer data; (2) were editorials, commentaries, or reviews without primary data; (3) did not specifically address Chinese consumers; or (4) were not available in full text.

2.4 Screening process and study selection

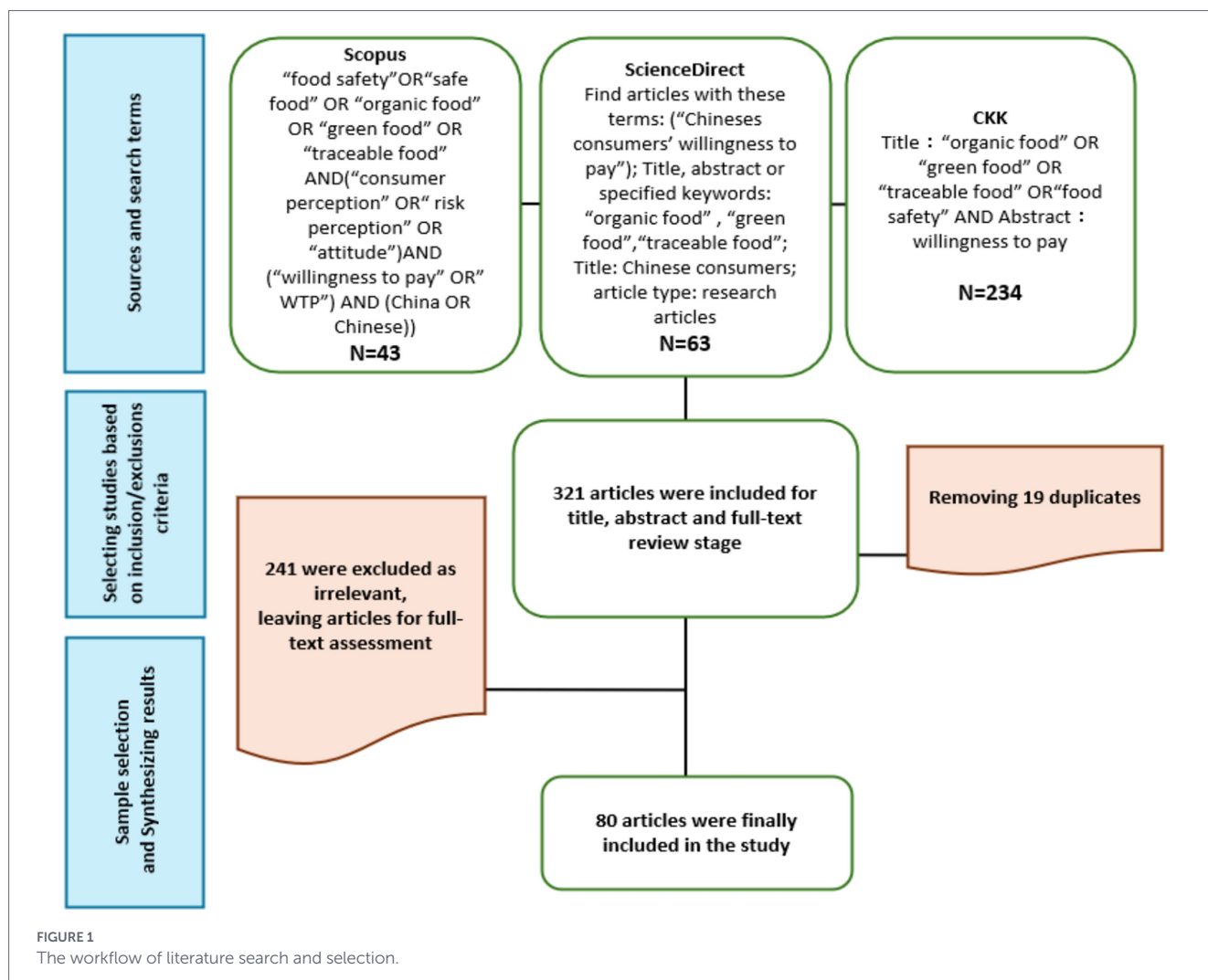
After removing duplicates manually, titles and abstracts of all retrieved records were screened against the eligibility criteria by one reviewer (Shalamujiang Maitiniyazi). The screening decisions were then independently verified by a second reviewer (Abulizi Bulbului). Any disagreements were resolved through discussion or consultation with a third reviewer (Sina Ahmadi Kaliji). The study selection process is summarized in the PRISMA flow diagram (Figure 1). A total of 340 records were identified from the three databases: After removing 19 duplicates, 321 records were screened by title and abstract. Of these, 199 were excluded as irrelevant, leaving articles for full-text assessment. Following full-text review, 42 articles were excluded for reasons such as not focusing on consumer perception, lacking WTP data, or being non-empirical. Ultimately, 80 studies met the inclusion criteria and were included in the final synthesis (Figure 1).

2.5 Data charting and synthesis

The following data were extracted from each included study: author(s), year of publication, study location, research method, food category, price premium (if reported), motivations for and barriers to purchasing safe food, whether consumers expressed concern about food safety and the reasons for such concern, and the characteristics of consumers who are more or less concerned about food safety. To ensure accuracy, one reviewer (Author1) performed the initial extraction, and a second reviewer (Author2) verified the extracted data; any disagreements were resolved through discussion.

3 Results

The final sample consisted of 80 empirical studies published between 2008 and 2025. The majority were quantitative survey-based studies employing econometric models such as logit/probit regressions, choice experiments, mixed logit models, and experimental auctions. A smaller number used qualitative interviews or mixed-method approaches. Most studies focused on urban consumers, particularly in economically developed regions such as Beijing, Shanghai, Jiangsu, Zhejiang, and Guangdong. Food categories most frequently examined included dairy products (especially milk and infant formula), pork, vegetables, seafood, and certified green or organic products. Sample sizes ranged from fewer than 200 respondents to more than 1,500 participants in large-scale surveys. Table 1 summarizes the main characteristics of the included studies.



3.1 Consumer’s demographic characteristics and food safety perception

An overview of existing studies reveals that Chinese consumers are highly concerned about food safety; however, this concern is not uniformly distributed across the population. Differences in demographic factors such as income, education, age, and gender have been shown to significantly influence the degree of food safety concern and perception. Several studies have consistently highlighted how consumers with different socio-economic backgrounds perceive and respond to food safety risks in distinct ways.

3.1.1 Income and food safety perception of consumers

Income is one of the most frequently studied determinants of food safety perception in China. Early literature already identified income, along with education, as a key factor influencing food safety awareness and purchasing behavior. With the rise in disposable income among Chinese households, consumer expectations regarding food quality and safety have also increased.

Several studies have reported that higher-income consumers tend to express greater concern about food safety risks, particularly those related to chemical contamination, packaging, and microbial hazards.

TABLE 1 Characteristics of included studies (n = 80).

Category	Distribution
Publication period	2008–2012 (early post-melamine wave); 2013–2018; 2019–2025 (digital/traceability expansion)
Methodological approach	Survey-based econometric analysis (majority); choice experiments; experimental auctions; Panel mixed logit; qualitative interviews
Food categories studied	Dairy (milk, infant formula); pork; vegetables; seafood; fruits; green/organic food; traceable food
Geographic focus	Major urban cities (Beijing, Shanghai, Jiangsu, Zhejiang, Guangdong); some multi-city national samples
Sample size range	<300; 300–800; >800 respondents
Main analytical focus	Risk perception: willingness to pay; label recognition; trust; traceability attributes

For instance, Cheng et al. (2016) found that consumers with higher monthly incomes were especially concerned about safety issues related to vegetables, such as pesticide residues and heavy metals. Likewise,

income showed a significant positive correlation with risk perception in the dairy sector, with Zhang et al. (2010) noting that more affluent households were especially sensitive to milk safety following past scandals. Extending this to other food categories, a recent study by Xu and Liu (2024) on green agricultural products confirmed that income remains a significant determinant of consumers' food safety perceptions. Using an extended theory of reasoned behavior framework, the study found that higher-income consumers demonstrated stronger perceptions of food safety risks, which in turn positively influenced their purchase intentions for green agricultural products. This finding aligns with earlier research and suggests that the relationship between income and food safety concern is consistent across diverse food categories, from vegetables and dairy to emerging sustainable product markets.

Income is also linked to behavioral responses, including greater willingness to seek premium or certified food products. High-income households are more likely to invest in their family's health through food choices and tend to be more skeptical about food quality, which may reflect a combination of heightened expectations and reduced tolerance for risk (Liu and Niyongira, 2017; Quan et al., 2018; Xu et al., 2010).

However, contrasting evidence also exists. In a study by Wang et al. (2014) higher-income respondents were less likely to perceive risks associated with dairy products, possibly because they could afford higher-quality items perceived as safer. On the other hand, those with lower incomes were more likely to perceive dairy products as risky due to their limited access to premium brands or trusted supply chains.

Adding further nuance, Cicia et al. (2016) conducted a survey in six Chinese cities and found that lower-income groups, particularly those living outside of major urban centers, exhibited the highest levels of concern about food safety. Lower-income groups exhibited higher reported levels of concern in certain regional studies (Cicia et al., 2016), although findings across studies remain inconsistent.

3.1.2 Education and food safety perception of consumers

Education level is widely regarded as a critical factor influencing consumer awareness and perception of food safety. Numerous studies have shown that individuals with higher educational attainment tend to be more knowledgeable about food-related risks and more concerned about safety standards (Meng et al., 2023).

For example, Wang et al. (2009) found a clear correlation between education level and food safety perception, noting that consumers with lower levels of education expressed less concern about certain food safety issues compared to those with higher education. Feng and Li (2008) similarly observed that well-educated consumers, often with higher incomes, tend to pursue better living standards and thus demonstrate greater sensitivity toward food quality and safety. These findings are consistent with the results reported by Chen et al. (2015) and Quan et al. (2011), who highlighted that highly educated dairy consumers were more likely to exhibit elevated concern for food safety. These findings are consistent with the results reported by Chen et al. (2017) and Quan et al. (2011), who highlighted that highly educated dairy consumers were more likely to exhibit elevated concern for food safety.

Several studies report a positive association between education level and food safety concern (Wang et al., 2009; Chen et al., 2017; Quan et al., 2011), although other studies find no statistically

significant relationship (Cheng et al., 2016; Cicia et al., 2016; Dai et al., 2021; Hou et al., 2020; Liu et al., 2020; Riccioli et al., 2020).

For instance, Cheng et al. (2016) reported no significant difference in food safety concerns across different educational groups, suggesting that education might not always be a determining factor in shaping perceptions. Similarly, Cicia et al. (2016) using panel mixed logit regression on data from 479 participants across six cities, found that education level did not significantly influence consumers' concern over pork safety.

3.1.3 Age and gender and food safety perception of consumers

Some authors have found a significant relationship between age and gender with the consumers' food safety perceptions. However, findings are not always consistent. The literature review reveals that males and females have significant differences in the concerns about food safety. The studies by Liu and Niyongira (2017) and Luo et al. (2021) showed that women have more concern about food safety than men. The finding is similar to the findings of Liu et al. (2013) who reported females paid more attention to food safety issues than men because they take more responsibility for buying and preparing food. Women are more family conscious than men, and they have taken the role of principal meal planners in the family, and they showed a relatively higher level of quality safety of dairy products (Quan et al., 2011). Women were more concerned about the price, brand, total quality, the degree of freshness, place of origin, purchasing place and shelf life of vegetables than men, when purchasing vegetables (Cheng et al., 2016). This finding is consistent with previous studies (Feng and Li, 2008; Liu et al., 2013; Wang et al., 2013). However, these results do not consist of other quantitative studies, which reported that male consumers were more concerned about food safety issues (Wang and Huo, 2016). There is an increasing number of males beginning to take responsibility for purchasing food in China, and they expressed more concern about the health issues of family members. Hence, they are more concerned about food safety than females (Chen et al., 2015; Feng and Li, 2008).

Compared to gender, age was a research topic that was of greater interest to the scholars and pundits dealing with this subject. The age variable inversely related to sensitivity to food safety in China (Cicia et al., 2016). The young consumers tended not to have family (no children, old people, or pregnant wife) which might be the reason of a low concern in production and processing factories (Liu and Niyongira, 2017). In general, consumers pay more attention to food safety and nutrition, with increases of age, and they are not very sensitive to price. These findings coincide with another report by Xu and Wu (2010) that consumers with different characteristics and different lifestyles have different levels of satisfaction with food safety. Young people and consumers with a low level of education are relatively satisfied with the food safety situation. Consistent with prior research (Cheng et al., 2016; Luo et al., 2021), these results indicate a positive correlation between age and level of concern about food safety, with younger consumers expressing comparatively less concern.

3.1.4 Family structure

Family composition plays a significant role in shaping Chinese consumers' WTP for safe food. Multiple studies show that the

presence of vulnerable family members, particularly children and elderly individuals, strongly influences food purchasing behavior.

For instance, Xie et al. (2015) found that 92.9% of organic food buyers had children in the household, indicating that families with children are more inclined to seek safer food options. Similarly, Zhao et al. (2010) identified family structure as the most significant factor influencing the purchase of traceable food, with consumers living with children or elders more likely to choose such products.

The same pattern is echoed in meat and dairy consumption. Wang and Huo (2016) reported that households with children or elderly members showed higher WTP for organic and green-labeled pork. Chen et al. (2013) and Guo and Li (2016) found that the presence of children significantly increased WTP for certified or sustainable milk. Likewise, Zheng et al. (2016) and (Xu and Chen, 2020) confirmed that households with children under 18 are more likely to buy traceable food products.

3.1.5 Other factors and food safety perception

In addition to the above factors, some other factors can also affect consumers' perception of safe food. Cheng et al. (2016) reported that consumers who purchase vegetables frequently were more likely to pay attention to food safety and quality than the ones who have never brought vegetables. This result is consistent with the finding of Zhou et al. (2015) that consumers who are taking responsibility for family food purchases are more sensitive about food safety and more concerned about food safety issues. Compared with respondents who never buy dairy products, the people who regularly consume dairy products are worried less about the safety and quality of dairy products because they know how to choose safer dairy products in the market (Quan et al., 2011). Yang and Hu (2013) explore the role of knowledge about food safety labels in the urban–rural gap in the demand for food safety in China and found that the WTP for the green food label was substantially higher among consumers who knew about the label, and the knowledge effect was larger in urban areas than in rural areas. In general, factors such as consumers' purchase

frequency and living area are also closely related to their perception of safe food and WTP (see Table 2).

3.2 Consumers' perception and attitudes towards safe food

3.2.1 The motivation to purchase safe food

Health, Chinese consumers are primarily motivated to purchase safe food due to concerns about health, food safety, and environmental protection. Attaching food quality certification labels issued by third-party certification bodies to food products has become an effective way for suppliers to convey quality information and provide quality assurance to consumers (Janssen and Hamm, 2012). Since the end of the last century, China has established a multi-tiered food quality certification system encompassing “organic,” “green,” and “pollution-free labels,” achieving remarkable results in enhancing food safety, promoting environmental protection, and increasing farmers' income (Yu et al., 2014). Numerous studies have shown that labels such as “organic,” “green,” and “safe food” serve as trusted indicators that reduce perceived risk, particularly in the wake of repeated food safety incidents (Hasimu et al., 2017; Yu et al., 2014; Zhou et al., 2015).

Health benefits consistently emerge as the strongest driver of safe food consumption. Consumers associate certified products with reduced exposure to harmful substances and enhanced nutrition. For example, Xie et al. (2015) and Sirieix et al. (2011) reported that health was the primary reason behind organic food purchases, followed by environmental benefits and taste. This was further confirmed by studies showing that individuals in poor health or with higher health consciousness are more likely to pay a premium for safe food (Liu and Chen, 2015; Wei et al., 2024; Yuan et al., 2021).

Alongside health, risk perception related to food safety plays a critical role in shaping purchasing intentions. Consumers with higher concerns about food safety are more willing to invest in products perceived as trustworthy. This has been observed across various food categories—including seafood, dairy, and produce—where heightened

TABLE 2 Consumer demographics and food safety perception.

Factors	General trend	Key empirical evidence	Contrasting findings/notes
Income	Higher income often associated with greater food safety concern and WTP for certified food	Higher-income consumers show higher concern for vegetables and dairy safety (Cheng et al., 2016; Zhang et al., 2012; Zhang et al., 2010). More likely to buy premium/certified food.	Some studies find lower risk perception among high-income consumers due to access to trusted brands; lower-income groups may feel more vulnerable (Wang et al., 2014; Cicia et al., 2016).
Education	Higher education linked to greater awareness and concern about food safety	Well-educated consumers show higher sensitivity to food safety and labeling, especially for dairy products (Wang et al., 2009; Chen et al., 2017; Quan et al., 2011; Quan et al., 2018).	No significant effect of education found in some studies, especially for pork safety (Cheng et al., 2016; Cicia et al., 2016).
Gender	Women generally more concerned about food safety	Women show higher concern due to household food responsibilities (Liu and Niyongira, 2017; Liu and Qiao, 2011; Quan et al., 2011; Quan et al., 2018).	Some studies report higher concern among men, reflecting changing gender roles (Wang and Huo, 2016; Feng and Li, 2008).
Age	Older consumers tend to show higher food safety concern	Concern increases with age; older consumers less price-sensitive and more cautious (Xu and Wu, 2010; Cheng et al., 2016).	Non-linear effects observed; some studies find no effect or highest concern among 30–39 age group (Cicia et al., 2016; Chen et al., 2017).
Family structure	Presence of children/elderly increases concern and WTP for safe food	Households with children or elders more likely to buy organic, traceable, or certified food (Xie et al., 2015; Zhao et al., 2014; Wang et al., 2014; Chen et al., 2017).	Effect is consistent across food categories with little contradictory evidence.

risk awareness leads to increased WTP for traceable and eco-labeled products (Liu and Chen, 2015; Yin et al., 2017).

While environmental considerations also influence behavior, animal welfare remains a marginal concern among Chinese consumers, unlike in Western contexts (Lu et al., 2025; Yip and Janssen, 2015). Overall, the literature strongly suggests that health-related motivations, perceived food safety risks, and individual health conditions are the most influential factors driving Chinese consumers' demand for safe food.

3.2.2 The barriers to purchase safe food

While interest in safe food is increasing in China, several barriers continue to restrict consumer uptake. Among these, price is the most critical obstacle. Numerous studies have reported that organic and traceable food products are perceived as expensive and are often purchased only by more affluent consumers. For example, some studies (Sirieix et al., 2011; Xie et al., 2015; Yin et al., 2010) found that high price significantly discourages regular purchases. Further confirmed this, Chinese consumers generally hold favorable attitudes toward organic foods, they perceive the products as expensive, and such perception negatively impacts the purchase intention (Lu et al., 2025).

In addition to cost, distrust, and limited knowledge also present major hurdles. Consumers often lack clarity about what safe food entails and how certification systems work. Studies by Hou (2011) and Liu and Chen (2015) found that skepticism toward traceability information, along with price concerns, reduced consumer confidence in safe food. Similarly, Wu et al. (2011) emphasized that unfamiliarity with certified food, confusion about labeling, and concerns over presentation all contribute to low acceptance of traceable products.

Accessibility also remains a practical concern. The high price and limited availability of organic food may lead consumers to forgo purchases because they perceive them as “not worth the cost or effort,” even if they feel financially capable of buying them (Guo et al., 2025; Yip and Janssen, 2015). Thøgersen et al. (2015) reached similar conclusions, highlighting that restricted availability further compounds price-related barriers.

3.2.3 Consumer's knowledge about safe food and label

Consumer knowledge is a key factor influencing the intention to purchase safe food. Although awareness of terms such as “organic,” “green,” and “traceable” food has increased in China, the literature suggests that consumers' substantive knowledge about these concepts—including their definitions, certification requirements, and distinguishing features—remains limited and fragmented.

In the organic food market, consumer cognition plays a crucial role in shaping purchase intentions. Higher levels of cognitive understanding about organic food significantly increase consumers' willingness to buy, whereas a lack of such cognition constrains market development (Yuan and Xiao, 2021). Liu et al. (2013) found that although Chinese consumers express high awareness of food safety, they demonstrate limited ability to identify safe food and its associated labels. Xie et al. (2015) similarly reported that only 44.8% of respondents in Nanjing and Shanghai could accurately define organic food.

However, consumer knowledge may vary by certification type. Gao et al. (2022) observed that urban residents in three Wuhan districts exhibited high concern for food safety and considerable

awareness of green agricultural products, leading to a strong willingness to purchase certified green food. This suggests that green food, as a longer-established certification in China, may be better recognized than organic food.

Nevertheless, confusion between certification types remains prevalent. Liu and Qiao (2011) found that 47.11% of respondents mistakenly identified organic food as green food, while 46.53% mistakenly identified green food as organic food, indicating that consumers' perception of green food standards exceeds the actual standards.

This confusion may stem from the unique position of green food in China's certification system. Green food, initiated in 1989, is a certification unique to China, managed by government agencies under the Ministry of Agriculture (Sanders, 2006). It was developed as a more practical alternative to organic certification, recognizing that most Chinese food products cannot meet the stringent standards of international organic certification. Green food is defined as safe, nutritious food produced and processed under the principle of sustainable development, following specific models, and certified by authorized organizations according to special standards.

Despite its longer history and government backing, consumer knowledge about green food remains superficial. Zhao et al. (2014) noted that although most respondents had heard of green consumption, nearly half of them lacked meaningful knowledge about its content or implications.

Understanding of food traceability systems is also low. Wu et al. (2012) found that only 28% of respondents understood the three core functions of such systems. Label recognition is another area of concern. In a study on certified apples, Wang et al. (2019) reported that more than half of respondents were unfamiliar with the certification, and nearly 10% had never heard of it at all. Similarly, Yin et al. (2010) found that only 36% of respondents could recognize organic labels, and just 15.7% could distinguish organic food from green or conventional alternatives.

Some studies indicate that green food labels are slightly better recognized. According to Feng and Li (2008), 82% of respondents were familiar with green food labels, while 78% could identify labels for hazard-free food. Nevertheless, these figures still suggest a general lack of comprehensive knowledge, especially regarding more technical or recently introduced certifications.

3.2.4 Purchasing channels of safe food

Supermarkets are the most preferred and trusted purchasing channel for safe food among Chinese consumers. According to an online survey conducted with over 1,500 participants from Beijing, Shanghai, and Chongqing, supermarkets were found to be the most common location for purchasing organic foods. Specifically, 63.5% of participants reported buying organic foods from supermarkets “often” or more frequently. In contrast, purchases from health stores, organic stores, and farmers' markets were less common, with fewer than 40% of participants buying from these locations at the same frequency (Lu et al., 2025). Liu et al. (2013) and Cheng et al. (2016), reported similar findings, noting that consumers highly trust supermarket food safety practices. Consequently, supermarkets have become the primary destination for safe food purchases. This preference stems from the widespread perception that supermarkets offer better safety, quality assurance, and regulated supply chains. In a survey conducted in Zhejiang province, Feng et al. (2012) observed that consumers most frequently purchased grapes from fruit supermarkets, followed by

traditional farming markets and street vendors. Key factors influencing the choice of purchasing location included convenience, freshness, and price.

Income level also influences purchasing behavior. Lower-income consumers tend to prioritize price and accessibility, often favoring open markets or street vendors for agricultural products. [Yang and Hu \(2013\)](#) reported that consumers earning under 1,000 RMB per month considered price the dominant factor in choosing where to shop. In contrast, higher-income consumers were more selective, placing greater emphasis on trust and quality. For instance, [Cheng et al. \(2016\)](#) found that respondents earning between 5,001 and 20,000 RMB per month preferred purchasing food from chain supermarkets, which they regarded as more reliable.

3.2.5 Price premium of safe food

For consistency across studies, all premium estimates in this review have been standardized as percentages relative to conventional products. In the text below, we report both the original monetary values (where available) and their corresponding percentage equivalents to preserve the richness of the primary data while facilitating cross-study comparison. Price premiums are uniformly presented as percentages relative to conventional food products. All original studies report prices in RMB, so no currency conversion was conducted. Despite limited knowledge about safe food, many Chinese consumers are willing to pay a modest price premium for products perceived as safer. Studies consistently show that consumers are prepared to pay more for green, organic, and traceable food, though the acceptable premium varies by product type and consumer segment. [Liu et al. \(2019\)](#) employed a choice experiment through face-to-face surveys across six Chinese cities to estimate consumers' willingness-to-pay (WTP) for traceable Fuji apples. Benchmarked against a non-traceable price of 6 yuan per 500 g, the estimated premiums are highest for international third-party certification (4.29 yuan, equivalent to a 71.5% premium), followed by domestic third-party certification (3.60 yuan, 60.0%) and government certification (2.84 yuan, 47.3%).

Consumers are willing to pay a significantly positive price premium for food traceability despite some differences across food products. [Wu et al. \(2012\)](#) noted that 95.8% of consumers would not pay more than 30% extra for traceable vegetables, while [Wang et al. \(2009\)](#) found that most consumers would pay under 10% more for traceable fish.

Evidence from research on green food suggests consumers accept a 5–10% price premium ([Xia and Zeng, 2013](#); [Zhao et al., 2014](#); [Xu et al., 2012](#)). This stands in contrast to the findings of [Yu et al. \(2014\)](#), who reported a significantly higher willingness-to-pay—specifically, premiums of 47% for green vegetables and 40% for green meat. Compared to the benchmark price of conventional fresh potatoes at 2 yuan, urban consumers' WTP a premium for green fresh potatoes ranges from 10 to 30%, indicating an overall modest level of willingness. From a regional perspective, the average premium level for green fresh potatoes ranges from 10 to 30% among urban consumers in three Chinese cities. Regional variation is observed, with Beijing showing the highest average premium level (1.96 on a 5-point scale where 1 = 0–10%, 2 = > 10–30%, 3 = > 30–50%, 4 = > 50–100%, and 5 = > 100%), followed by Chengdu (1.88) and Zhengzhou (1.73). These findings suggest that willingness to pay for green agricultural products is associated with regional economic development ([Lun et al., 2023](#)).

[Yin et al. \(2020\)](#) compares consumer WTP estimates for organic shrimp at the same traceable level. Results show that the average consumer WTP for organic shrimp is significantly higher than that for non-organic shrimp under the same traceability condition. Taking the local market price of conventional tomatoes (5.00 yuan/kg) as the reference, the calculated premiums consumers are willing to pay for pollution-free, green, and organic tomatoes are 7.518, 20.481, and 49.746%, respectively ([Chen et al., 2018](#)). Similarly, [Xie et al. \(2015\)](#) reported that nearly half of respondents accepted up to a 30% premium for organic vegetables, and a third were willing to pay 50% or more.

In the dairy sector, consumers remain cautious. A survey by [Wang et al. \(2008\)](#) indicated a modest 5.2% price premium associated with HACCP-labeled dairy. Other studies, such as [Gao et al. \(2016\)](#), found WTP up to 40% more for sustainable milk. For GAP-certified milk, the average additional premium was around 18.5% ([Chen et al. \(2013\)](#)). Most demand is for traceable milk, 21.7% higher than regular milk prices, followed by cooking oil 19.8% and pork 16.7% ([Zhang et al., 2012](#)) (see [Table 3](#)).

3.2.6 Influencing factors of consumer willingness to buy safe food

Existing studies consistently highlight that demographic characteristics play a significant role in shaping Chinese consumers' willingness to buy safe food ([Cheng et al., 2016](#); [Guo et al., 2025](#); [Jin et al., 2023](#); [Li et al., 2025](#); [Liu et al., 2013](#)). Our review of 80 relevant studies in both English and Chinese ([Table 4](#)) identifies several key factors influencing consumers' purchase intentions.

Among the most frequently cited determinants are income, education level, age, gender, health consciousness, and prior experience with food safety incidents. These socio-demographic variables often intersect with consumers' awareness, trust in food labels, and knowledge of certification systems, which further shape attitudes and willingness to pay. Higher-income and better-educated consumers tend to express stronger preferences for certified safe food, motivated by health and quality concerns. Additionally, women and older consumers often demonstrate greater sensitivity to food safety issues due to their roles in household food purchasing and caregiving. Trust in certification, previous exposure to food scandals, and perceived benefits of safe food, such as health protection and environmental sustainability, also emerge as influential drivers.

4 Discussion and conclusion

4.1 Synthesized patterns in the literature

This review of 80 empirical studies reveals clear concentration patterns in the Chinese food safety literature. As summarized in [Table 4](#), income is the most frequently examined determinant of WTP (41 studies), followed by trust in certification systems and food safety perception (33 studies), education (27), and age (24). In contrast, environmental benefits (4 studies), brand effects (3), and clarity of label information (3) receive comparatively limited scholarly attention. This distribution indicates that the literature has primarily emphasized economic capacity and trust-based mechanisms rather than sustainability-oriented motivations.

TABLE 3 Summary of consumers' perception and attitudes towards safe food in China.

Theme	Key synthesized findings	Representative evidence
Motivation to purchase safe food	Health concerns are the dominant motivation driving safe food consumption, followed by food safety risk reduction and environmental protection. Certified labels (organic, green, safe food) act as trust cues that reduce perceived risk, especially after repeated food safety incidents. Health-conscious consumers and individuals with poorer health conditions show higher WTP for certified safe food.	Xie et al. (2015), Sirieix et al. (2011), Liu and Chen (2015), and Wu et al. (2012)
Barriers to purchase safe food	High price premiums represent the most significant barrier, particularly for low- and middle-income consumers. Additional obstacles include distrust in certification systems, limited understanding of labeling, skepticism toward traceability information, and restricted physical access to safe food products, especially outside urban supermarkets.	Sirieix et al. (2011), Xie et al. (2015), Hou (2011), Yip and Janssen (2015), and Thøgersen et al. (2015)
Consumer knowledge and label understanding	Although general awareness of safe food is relatively high, actual knowledge remains limited and fragmented. Many consumers struggle to distinguish between organic, green, hazard-free, and conventional food. Understanding of traceability systems and label meanings is particularly low, leading to confusion and reduced confidence in certified products.	Liu et al. (2013), Xie et al. (2015), Liu and Qiao (2011), Yin et al. (2017), and Wu et al. (2012)
Purchasing channels of safe food	Supermarkets are the most trusted and preferred purchasing channel for safe food, perceived as offering better quality control and safety assurance. Income significantly influences channel choice: lower-income consumers prioritize price and accessibility, while higher-income consumers favor chain supermarkets due to greater trust in food safety and quality.	Cheng et al. (2016), Liu et al. (2013), Feng et al. (2012), and Yang and Hu (2013)
Price premium for safe food	Many consumers are willing to pay a modest price premium for safe food, particularly for organic and green products. Accepted premiums typically range from 5 to 30%, depending on product type. WTP is generally lower for traceable food and dairy products, reflecting cautious attitudes and limited trust in newer certification schemes.	Xie et al. (2015), Yu et al. (2014), Wu et al. (2012), Wang et al. (2008), and Chen et al. (2013)
Influencing factors of willingness to buy safe food	Purchase intention and WTP are shaped by socio-demographic factors (income, education, age, gender), health consciousness, prior exposure to food safety incidents, trust in certification systems, and perceived health and environmental benefits. Higher-income, better-educated, older consumers and women tend to show stronger preferences for safe food.	Liu et al. (2013), Cheng et al. (2016), and Gao et al. (2016, 2022).

TABLE 4 Factors mentioned in the papers (grouped by frequency of mention).

Frequency group	Factors (number of papers)
High-frequency (≥ 20 papers)	Income and expenditure (41); consumers' trust in safe food/perception (33); education (27); age (24); food safety perception (22)
Medium-frequency (10–19 papers)	Price (20); gender (15)
Medium-low frequency (5–9 papers)	Knowledge about safe food (11); health (9); whether have child/older in the family (7); availability to purchase (7); health benefits (6)
Low-frequency (≤ 4 papers)	Family size (5); environment benefits (4); brand (3); shopping venues (3); label information (3); living place (2); origin of products (2); freshness (2); employment status (2); purchasing experience of safe food (2); attitudes toward safe food (1); shopper status (1); married status (1); access to information serve (1)

Source: Data from the survey.

Across product categories, dairy (especially milk and infant formula), pork, and vegetables dominate empirical investigations, reflecting their historical association with major food safety scandals (Zhou and Wang, 2011; Zhang et al., 2010). Methodologically, most studies rely on survey-based econometric models and choice experiments (e.g., Ortega et al., 2011; Xu and Wu, 2010), while experimental and longitudinal approaches remain relatively scarce.

Taken together, the mapping results suggest that research on safe food consumption in China is largely structured around an income–risk perception–trust nexus, with comparatively less systematic exploration of institutional enforcement mechanisms, rural heterogeneity, and behavioral experimentation.

4.2 Interpreting the income–trust–risk nexus

The dominance of income as a determinant across 41 studies confirms that WTP for safe food in China remains strongly linked to purchasing power rather than purely normative or environmental motivations. Higher-income consumers consistently demonstrate stronger WTP premiums for certified products (Zhang et al., 2012; Liu et al., 2019), while lower-income groups exhibit higher price sensitivity and constrained market participation.

At the same time, the prominence of trust-related variables (33 studies) underscores the central role of certification credibility and institutional confidence. Studies repeatedly show that consumers are willing to pay more when traceability systems or third-party certifications are

perceived as reliable (Yin et al., 2017; Yuan et al., 2024). However, persistent confusion regarding label distinctions (Liu and Qiao, 2011; Yin et al., 2010) likely weakens the signaling power of certification schemes.

Importantly, the literature also reveals a gap between high reported concern and moderate price premiums, which typically range below 20–30% in most product categories (Xie et al., 2015; Wang et al., 2008). This divergence suggests the presence of an intention–behavior gap in the Chinese safe food market, where stated concern does not fully translate into purchasing behavior.

4.3 Policy and market implications

The synthesis of evidence suggests three primary implications. First, strengthening certification transparency and enforcement remains critical. Given the centrality of trust in shaping WTP (Liu et al., 2013; Wang et al., 2022), improving regulatory consistency and traceability systems could enhance the credibility of safety signals. Second, consumer education initiatives may reduce information asymmetry. Although awareness of safe food concepts is widespread, empirical studies show persistent confusion regarding label meanings and certification standards (Yin et al., 2010; Liu and Qiao, 2011). Enhancing label clarity may improve market efficiency. Third, pricing strategies must account for income heterogeneity. Since WTP remains strongly income-dependent, high premiums risk limiting safe food consumption to higher-income segments, potentially reinforcing inequality in food quality access. Supermarkets continue to function as trusted intermediaries (Cheng et al., 2016; Liu et al., 2013), suggesting that retail-level quality assurance remains central to consumer confidence.

4.4 Limitations and future research

Several limitations characterize existing literature. First, most studies rely on cross-sectional surveys and stated-preference methodologies, which may overestimate actual WTP relative to revealed behavior. Second, research is heavily concentrated in urban and economically developed regions, limiting generalizability to rural populations. Third, heterogeneity in methodological design and product categories complicates direct comparability across studies.

Future research should incorporate behavioral experiments, panel data, and real-market interventions to better capture dynamic consumer responses. In addition, emerging digital traceability systems and blockchain-enabled transparency mechanisms (Duan et al., 2024; Paksresht et al., 2024) provide promising avenues for examining how evolving information infrastructures reshape trust formation and purchasing behavior.

Author contributions

SM: Funding acquisition, Methodology, Writing – original draft, Writing – review & editing. AB: Project administration, Writing – review & editing. SA: Writing – review & editing, Methodology.

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Conflict of interest

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