The influence of online information on consumers' channel migration behavior of fresh agricultural products

Ningbo Cui[†], Jin Dong[†], Xiaofan Fan, Duanyang Zhao*, Mingshuo Liang and Jiaoyu Shi

College of Economics and Management, Northeast Agricultural University, Harbin, China

Introduction: Compliance with the latest patterns in online consumption of fresh agricultural products should prioritize the shifts in consumer behavior. This study aimed to clarify the influencing factors of consumers' channel migration behavior of fresh agricultural products. While the migration of consumers' consumption of fresh agricultural products to online channels is an undeniable fact, and this trend continues, literature on this topic remains limited.

Methods: Based on SOR theory, and from the dual perspectives of information transmission and information reception, this study exploratively introduced the network affinity of consumers, and constructed the concept model of the influencing factors of consumers' channel migration behavior of fresh agricultural products including information acquisition and risk perception. 416 valid questionnaires were used to conduct structural equation model analysis.

Results: The results confirm that product information and platform information significantly affect consumers' channel migration behavior of fresh agricultural products. Product information including feature information and price information has a positive influence on consumers' channel migration behavior of fresh agricultural products. The same is true for such behavior and the platform information including service information and logistics information. Risk perception plays a partial mediating role in the influence of product information variables and platform information variables on consumers' online purchasing and migration behavior of fresh agricultural products. Network affinity negatively moderates the causal relationship between product information and risk perception as well as that between platform information and risk perception. The effect is more pronounced for consumers with high network affinity than those with low network affinity.

Discussion: The study presented in this paper offers a replicable theoretical framework for future discussions on consumer channel migration behavior, and enriches the literature on consumer online consumption behavior. It is highly meaningful for further improving the online consumption stickiness, tapping the potential of online consumption and improving the circulation efficiency of fresh agricultural products in the post-pandemic era.

KEYWORDS

fresh agricultural products, channel migration behavior, online information, risk perception, network affinity

1 Introduction

With the rapid development of platform economics and the continuous progress of cold chain logistics technology, China's fresh agricultural industry is growing quickly. In light of this, buying fresh agricultural products online has become a new direction of consumption development, and the domestic online sales scale of fresh agricultural products is gradually expanding (Yan et al., 2020). According to statistics, the transaction scale of domestic fresh e-commerce exceeded 80 billion dollars in 2022, with a year-on-year growth of 20.25%. Online purchase of fresh agricultural products can break time and space constraints, expand product coverage, enhance selectivity, and meet diversified needs. It can also effectively improve the efficiency of communication between buyers and sellers, bringing less turnover links and lower circulation costs. These advantages of online consumption are increasingly recognized by more and more consumers (Guo J. et al., 2022; Wang and Jia, 2023). Especially during the COVID-19 epidemic, online purchase of fresh agricultural products has brought more convenience to consumers. Contactless distribution has reduced the time cost and infection risk, encouraging a shift in fresh agricultural product consumption to online channels (Xie et al., 2022; Jiang et al., 2023). Although the traditional offline retail channel is still the main sales method of fresh agricultural products in China, a trend of consumers' online channel participation and an increase of online user penetration rate are emerging due to the epidemic (Pu et al., 2022). While online consumption is becoming more mainstream, e-commerce platforms need to adapt to consumers' preferences to ensure a more sustainable development in the evolving business environment and growing market competition (Zhang et al., 2020; Shariffuddin et al., 2023). Purchase channel migration of consumers is an important indicator reflecting the development of fresh agricultural products market, in the post-epidemic era, fresh e-commerce enterprises can formulate marketing strategies to attract more consumers by clarifying the key factors affecting consumers' channel migration behavior of agricultural fresh products. This will help to shape consumers' online fresh consumption habits, which in turn will increase the stickiness of fresh agricultural products' online consumption and expand the online consumption space.

Existing research has extensively explored the factors influencing consumers' online purchasing migration behavior for fresh agricultural products, with risk perception being an important determinant (Liu and Wu, 2020; Wang et al., 2022). Consumers usually face some unavoidable exogenous risks when choosing purchase channels. Consumers' willingness, possibility and frequency to buy fresh agricultural products online will decrease as a result of their perception of risk (Hsieh and Tsao, 2014; Lazaroiu et al., 2020). As for the cause of risk perception, the classical economic explanation is the adverse selection and moral hazard caused by information asymmetry. Although online ordering is convenient and fast, it is difficult for online channels to provide consumers with an intuitive experience and personalized services. Since consumers cannot check the physical objects on site before placing orders, they cannot effectively identify online fresh agricultural products' quality and value (Lee et al., 2019; Yang et al., 2021). Meanwhile, consumers are very sensitive to the safety of fresh agricultural products, but purchasing fresh agricultural products online has the inherent disadvantages of long return and replacement cycles with incidental costs. Once the product quality problems or

product quality is not up to expectations, return and replacement will directly lead to conflicts of interests between the two parties in the transaction and further strengthen consumers' risk perception (Mahapatra and Mishra, 2021). In addition, to pursue short-term sales and profits, online platform sellers may publish false information or even carry out speculation. Some consumers may not choose online channels for risk aversion (Tao et al., 2021). Therefore, to promote the healthy development of the online consumption market of fresh agricultural products, efforts should be made to reduce the risk perception of online purchase migration by improving information symmetry.

Information acquisition is the process of consumers' information collection, identification and acceptance. Effective information acquisition plays a positive role in reducing consumer risk perception. The reduction of risk perception is actually to cause cognitive change or persuasion of consumers, and the information display and transmission in this process is essential (Tung et al., 2012). The current speed of consumer information dissemination is rapidly increasing under the catalysis of the network. In this regard, the academic community has further discussed the transmission effect of different information content. These studies focus on exploring feasible ways to reduce consumers' risk perception from the perspective of information transmission, and affirm the value of product information and platform information in reducing information asymmetry and consumer risk perception of fresh agricultural products (Cang and Wang, 2021; Lin et al., 2021). However, information transmission is a process involving both supply and demand in the market. Effective information acquisition requires not only online sellers to make efforts in information disclosure and transmission, but also consumers to take the initiative to search for information. Currently, China is in a period of rapid development of the Internet. Various new media platforms provide a feasible way for consumers to acquire useful online information about fresh agricultural products, and online information has become the driver of consumers' online consumption. Only when consumers obtain more useful information online can they comprehensively know online fresh agricultural products and make choices on the shift to online purchases (Jun and Park, 2016), which is consistent with the laws of information dissemination. In other words, online information demands are the foundation of the channel migration behavior from offline to online. Consumers tend to acquire relevant online information before making online purchasing migration behavior of fresh agricultural products. Many scholars have discussed the role of information search in consumers' purchasing behavior regarding genetically modified food, dairy products, durable goods, and electronic products (Dutta and Das, 2017; Zhu et al., 2018; Li et al., 2021; Yang et al., 2022). Additionally, some scholars have emphasized the beneficial value of online information display from the perspective of information transmission in previous research on consumers' channel migration behavior of fresh agricultural products of fresh agricultural products (Guo H. et al., 2022; Zhao, 2022; Li et al., 2023). Regrettably, the majority of these studies still lack sufficient attention to consumer information acquisition, so more pertinent studies are needed.

Therefore, we attempt to answer the following questions:

> RQ 1: Does risk perception have a negative impact on consumers' channel migration behaviors when it comes to fresh agricultural products?

RQ 2: How does different online information affect consumers' risk perception?

RQ 3: How does consumer information acquisition affect the impact of online information on risk perception?

To address these issues, based on SOR theory, and from the dual perspectives of information transmission and information reception, this study exploratively introduced the network affinity of consumers, and constructed the concept model of the influencing factors of consumers' channel migration behavior of fresh agricultural products including information acquisition and risk perception. The field survey data of 416 fresh agricultural products consumers in Harbin, Heilongjiang Province, was used for this study. The effects of product information, platform information and risk perception on consumers' channel migration behavior of fresh agricultural products, as well as the moderating effect of network affinity, were empirically tested. The following three factors primarily represent the scientific contributions of this study as compared to earlier investigations. First, based on the SOR model, it constructs a conceptual model of online purchasing migration behavior of fresh agricultural products including information acquisition and risk perception, which provides a replicable analytical framework for future discussions on consumer channel migration behavior, and helpful to expand the theoretical research on consumer purchasing channel migration. Secondly, from the perspective of information dissemination, this study exploratively introduced the network affinity of consumers, the online information of fresh agricultural products and the network affinity of consumers are included in the same analysis framework, which not only reflects the openness of online market information of fresh agricultural products from the perspective of information transmission, but also pays attention to consumers' information acquisition ability from the perspective of information reception. Thirdly, based on the differences in consumers' ability to access information, the consumer data with high network affinity and low network affinity are analyzed by quantitative method, respectively. The various responses of information access to risk perception of the two specific groups were then analyzed collectively. The research of this paper not only provides new empirical evidence for accelerating the improvement of online channels for fresh agricultural products, but also provides new ideas for accelerating consumers' migration to online purchase of fresh agricultural products, and provides practical inspiration for the online marketing of the e-commerce of fresh agricultural products, which will contribute to the sustainable development for e-commerce of fresh agricultural products.

The remaining part of this paper is organized as follows. Section 2 constructs a conceptual model, theoretically analyzes the influencing factors of consumers' channel migration behavior of fresh agricultural products of fresh agricultural products and puts forward research hypotheses. Section 3 introduces the research methods, variable selection, data sources and sample characteristics. Section 4 provides the results of the study. Section 5 is a discussion. Section 6 presents conclusions, policy recommendations and future perspectives.

2 Theoretical analysis and research hypothesis

2.1 Conceptual model

In 1974, Mehrabian and Russell put forward the SOR model based on environmental psychology, which originated from the SOR model (Stimulus-Organism-Response Model) first proposed by Woodworth in 1926 on the basis of the Stimuli–Response Theory (Lin et al., 2021; Xu et al., 2022). The SOR model recognizes human intrinsic factors and adds the middle between stimulus and response as a mediator variable (Xu et al., 2022). The model deconstructs the whole process from the stimulus to the behavior and provides theoretical support for the in-depth analysis of the intrinsic state change after the stimulus. It is widely used in psychology, behavioral economics and management research (Yuan et al., 2020; Brinda et al., 2022). In the field of consumer behavior research, it is commonly used to explain how environmental stimuli affect consumer psychological changes and then act on consumer market participation behavior (Yuan et al., 2020). The process of consumers' purchasing decisions moving from one channel to another is called channel migration. In recent years, information search and online orders have been completed anytime and anywhere through smart phones, which occupies more and more fragmented time of consumers and promotes cross-channel purchasing behavior. Online information is an important factor influencing consumer behavior. From the perspective of information dissemination laws, effective information transmission relies on both the information source and the information itself, as well as the ability of the information recipient to access and correctly understand the information. In the digital age, the consumption scenario of fresh agricultural products has shifted from offline to online, with consumer decisions transitioning from being determined by the products themselves to being influenced by the online product information. Consumers engage in online information acquisition, comparison, and interaction, and to some extent, the precision of information embedded in the consumption scenario directly determines consumer behavior. This article employs the SOR model as a theoretical framework, which is commonly used in existing research to analyze consumer online purchasing behavior. For instance, Tian et al. (2022) focused on the impact mechanism of mobile short video advertising on the consumption behavior of young people based on the SOR model (Tian et al., 2022). Wu and Huang (2023), based on the SOR model, explored the impact of perceived value and trust on consumers' continuous purchase intention in live-streaming e-commerce (Wu and Huang, 2023). Therefore, previous studies support the applicability of the SOR model in explaining the effects of external environmental stimuli on individual consumers and their behavioral responses. Based on the above analysis, this paper constructs a conceptual model of influencing factors of consumers' channel migration behavior of fresh agricultural products of fresh agricultural products (see Figure 1), in which information acquisition as a stimulus variable will affect consumers' risk perception of online purchase of fresh agricultural products, and thus affect consumers' channel migration behavior of fresh agricultural products of fresh agricultural products. It is discussed specifically as follows. (1) Existing studies usually focus on product information, including feature information and prices information, and platform information, including service information and logistics information as stimuli (Wu and Zhu, 2015; Ren and Le, 2018). Few studies concentrate on consumer factors. In this

paper, consumers' online information acquisition ability is measured by network affinity, so the "Stimulus" variable integrates product information, platform information and network affinity. (2) "Organism" refers to consumers' risk perception, reflecting consumers' subjective judgment on the risk of online purchase of fresh agricultural products. (3) "Reaction" refers to consumers' online purchasing migration behavior of fresh agricultural products.

2.2 Theoretical analysis and research hypothesis

2.2.1 Product information, platform information, and channel migration behavior

Product features are important indicators to measure the value of fresh agricultural products. The freshness of the quality, the standardization degree of outer packing and the complete degree of certification are basic for consumers to judge the quality of fresh agricultural products in advance (Watanabe et al., 2021; Wang and Jia, 2023). The more abundant product feature information provided by online channels, the easier it is for consumers to be attracted to online channels for consumption. On the one hand, online channels have transcended the temporal and spatial constraints of traditional offline consumption, so consumers from different regions purchase fresh agricultural products with same price. The transparent and fair pricing information provided by online channels will prioritize consumers to choose online purchasing channels. On the other hand, due to the sensitivity to product price, consumers will give priority to transaction costs when choosing purchase channels, so they tend to choose low-price and better-deal products (Chen and Wang, 2018). Based on the discussion above, this paper proposes the following hypothesis:

H1a: Feature information (FEI) positively affects channel migration behavior (CMB).

H1b: Price information (PRI) negatively affects channel migration behavior.

Online channels provide opportunities for information disclosure and exchange among consumers, and merchants with reliable sources and high reputation levels promote consumers' online purchases (Ma, 2019). Online service is an important path to close the distance between businesses and consumers. Good service quality will encourage consumers to choose to buy fresh agricultural products online. In addition, due to the perishability and timeliness of fresh agricultural products, consumers pay more attention to the logistics delivery time and whether it is delivered safely. High-quality logistics can enhance consumers' expectations of online purchases of fresh agricultural products (Wang and Zhang, 2020). Based on the above discussion, this paper proposes the following hypothesis:

H1c: Service information (SEI) positively affects channel migration behavior.

H1d: Logistics information (LOI) positively affects channel migration behavior.

2.2.2 Product information, platform information, and risk perception

Online channels can provide complete and rich information on product features, including not only basic features such as product type, packaging and origin, but also food certification characteristics such as production standardization and quality and safety. These can enhance consumers' certainty about the quality and safety of fresh agricultural products and improve consumers' trust and reduce their perception of risk (Yue et al., 2017). Fresh agricultural products are mostly necessities. Although the price elasticity of demand is generally small, consumers tend to be more price-sensitive. The fairness of product prices is a major concern for consumers. Compared with traditional offline channels, online channels have the price advantage of economies of scale. Meanwhile, online platforms provide convenience for consumers to search for information and compare prices (Bodur et al., 2015; Bhatnagar et al., 2021). In other words, consumers tend to buy fresh agricultural products similar to those available offline at more favorable prices. Price discounts and promotions online release more dividends, which increase consumers' sense of value acquisition and help consumers reduce the perception of risk. According to the discussion above, this paper puts forward the following hypothesis:

H2a: Feature information (FEI) negatively affects the risk perception (RP).

H2b: Price information (PRI) positively affects the risk perception.

Online platforms not only provide consumers with real-time customer service and interaction, but also display comprehensive reviews of products. Consumers can gain a comprehensive understanding of products through interaction with merchants and evaluations from other consumers. Therefore, the high-quality services provided by merchants can increase consumers' emotional experience and effectively reduce their loss (Li and Zhang, 2018). Meanwhile, good website design is more convenient and reliable for consumers. There are many uncertainties in the process of transport and delivery of online products before receipt. The occurrence of these problems will increase consumers' perception of risk (Jin, 2021). According to the discussion above, this paper puts forward the following hypothesis:

H2c: Service information (SEI) negatively affects the risk perception.

H2d: Logistics information (LOI) negatively affects the risk perception.

2.2.3 Perception and channel migration behavior

Compared with offline channels, online purchasing of fresh agricultural products leads to more uncertainty, so consumers' risk perception coefficient is higher (Zia et al., 2022). According to the loss-aversion theory, potential risks are harder for customers to take than possible advantages, and logical customers would actively consider the likelihood that a risk will materialize as well as the potential losses before deciding to make a change (Teng and Ming, 2023). Consumers

FIGURE 1
Conceptual model.
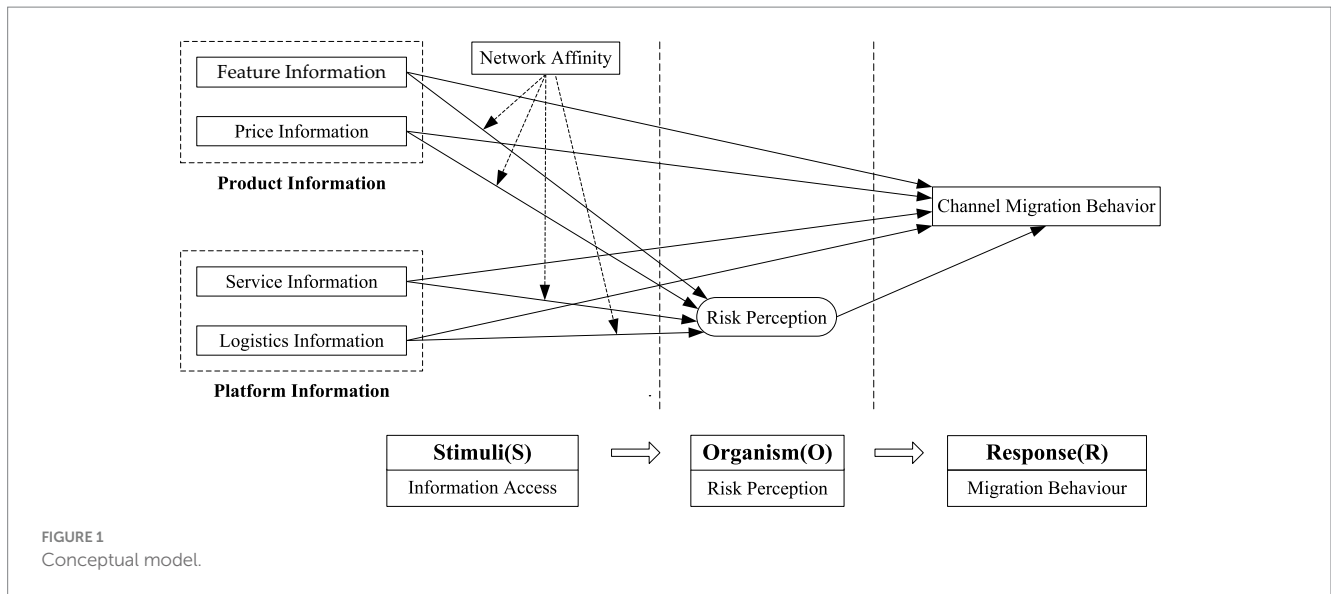
may perceive multiple risks when deciding whether to switch to buying fresh produce online. Therefore, the chance that consumers migrate to online channels decreases as their perceived risk of online products increases, when purchasing online, consumers are more inclined to choose reputable merchants with higher product and service quality and lower potential risks (Wang et al., 2021). Risk perception is an important restriction factor affecting consumers' online purchasing migration behavior of fresh agricultural products. Based on the discussion above, this study proposes the following hypothesis:

> H3: Risk perception negatively affects channel migration behavior of fresh agricultural products.

2.2.4 Mediating effect of risk perception

In the online market environment, the display of abundant online information can reduce the possibility that the consumer cannot truly perceive the problem of the fresh agricultural products and reduce the risk that the consumer does not understand the purchased product. Efficient and complete interactive experience of product information and platform information strengthens the psychological connection between online products and consumers to a certain extent. It also plays a role in promoting consumers' sensory recognition (Chen and Li, 2023). It satisfies the needs of consumers and enhances the identity of online purchases. Therefore, the presentation of online information dissolves informational barriers. Specifically, it reduces information asymmetry and realizes the rapid and effective transmission of information, which lessens the perception of risk among consumers while providing them with a varied online shopping experience. It thereby lowers the psychological barriers to online consumption for consumers and encourages the online channel migration of fresh agricultural products (Cheng et al., 2019; Wang and Bu, 2021).

> H4a: Risk perception has a mediating effect on the influence of feature information on channel migration behavior of fresh agricultural products.

> H4b: Risk perception has a mediating effect on the influence of price information on channel migration behavior of fresh agricultural products.

> H4c: Risk perception has a mediating effect on the influence of service information on channel migration behavior of fresh agricultural products.

> H4d: Risk perception has a mediating effect on the influence of logistics information on channel migration behavior of fresh agricultural products.

2.2.5 Moderating effect of network affinity

The Internet is accelerating the present rate at which information is disseminated. Consumers, in order to ensure a better online shopping experience for fresh products, create a desire for knowledge by acquiring more pertinent online information. Network affinity represents consumers' preference for the Internet and cumulative degree of experience in network behavior. Consumers with more Internet experience will be more adept in the process of Internet browsing, easier to quickly search for information they are interested in and have a higher perception of online products than consumers with lower network affinity (Wang et al., 2016). Higher network affinity helps to reduce consumers' risk perceptions. On the one hand, consumers proficient in online searches have a higher level of acceptance when faced with new things and are more likely to proactively acquire the information they need during the online purchasing process, and enhance their perceived ability of online purchases. On the other hand, the more experienced consumers are with the Internet, the more likely they are to find the advantages of buying fresh agricultural products online. Thus, their perception of risk can be reduced (Han and Kang, 2022). Based on the above discussion, this paper proposes the following hypothesis:

H5a: Network affinity (NA) plays a moderating role in the influence of feature information on risk perception.

H5b: Network affinity plays a moderating role in the influence of price information on risk perception.

H5c: Network affinity plays a moderating role in the influence of service information on risk perception.

H5d: Network affinity plays a moderating role in the influence of logistics information on risk perception.

3 Research design

3.1 Model construction of structural equation model

Structural equation modeling is suitable for analyzing the relationship between multiple types of variables, with the advantage that multiple indicators and variables can be handled together, avoiding the errors in evaluation results brought about by the traditional method of studying one indicator alone. It is divided into two categories: covariance-based structural equation modeling (CB-SEM) and variance-based partial least squares structural equation modeling (PLS-SEM). The variables set in this paper, such as product information, platform information, and risk perception, are all indirectly measured latent variables. Thus, PLS-SEM is chosen to conduct empirical analyses considering the research purpose of this paper. The PLS-SEM analysis is divided into two parts: the measurement model and the structural model. The measurement model, also known as the validated factor analysis model, is used to observe the relationship between variables and latent variables. The measurement model is generally composed of two equations with the following expressions, respectively:

$$X = \Lambda x \xi + \delta$$

$$Y = \Lambda y \eta + \varepsilon$$

x is the exogenous observed variable, ξ is the exogenous latent variable, Λx is the factor load of indicator x at ξ, and δ is the measurement error. y is the endogenous observed variable, η is the endogenous latent variable, Λy is the factor load of index y on η, ε is the measurement error. Latent variables and measurement error are independent of each other Structural models, also known as latent variable causality models, represent relationships between latent variables. The specific expression for the structural model is:

$$\eta = B\eta + \Gamma \xi + \zeta$$

B is the path coefficient, representing the relationship between endogenous latent variables; Γ is the path coefficient, representing the

influence of exogenous latent variables on endogenous latent variables; ζ is the measurement error.

3.2 Variable selection

The explanatory variables of this study are the latent variable consumers' channel migration behavior of fresh agricultural products of fresh agricultural products, which are mainly determined by three observable variables: interest in purchasing fresh agricultural products through online channels, the possibility of channel migration of fresh agricultural products, and online channel recommendation. The variables above are measured using a 5-point Likert scale ranging from "very low" to "very high," with 1 to 5, and 3 being the neutral option. The product information and platform information are among the external environmental data that the study examined. The product information has two variables: feature information and price information. The feature information has three measurement items: the degree of certification, the degree of packaging standardization, and the quality of the fresh agricultural products online. The price information has two measurement items: the strength of the price concessions and the fairness of the price. Platform information consists of service information and logistics information. Three measurement items are used to measure the former: the degree of professionalism in customer service, the degree of webpage design perfection, and the degree of satisfaction with online reviews. Three measurement items are used to measure the latter: the level of convenience, timeliness, and professionalism of logistics and distribution. Network affinity is measured by the degree of consumers' online search. Due to the multiplicity of risk perceptions of consumers' channel migration of fresh agricultural products, this paper refers to the studies of Jin (2021) and Alrawad et al. (2023). There are a total of five measurement items for risk perceptions: the possibility of economic loss, the possibility of dissatisfaction, the possibility of exposure of personal privacy, the possibility of loss in the transport process, and the possibility of poor service quality (Jin, 2021; Alrawad et al., 2023). There were three measurement items for channel migration behavior: "I am likely to purchase fresh agricultural products from online channels," "I am interested in migrating to online purchases of fresh agricultural products," and "I am willing to recommend the experience of purchasing fresh agricultural products from online channels to others." These variables above were measured using a 5-point Likert scale, ranging from "very low" to "very high," with 1 to 5, and 3 being a neutral option. Network affinity was measured by the degree of consumers' web searching capability, which was also measured by a 5-point Likert scale from "very low" to "very high," with 1 to 5 as the neutral option and 3 being the neutral option. The control variables were age, gender, education level, food safety awareness and household income level of consumers. Age and education level were measured by actual years of experience. Gender was measured by "male = 1, female = 0". Food safety awareness was measured by the Likert 5-level indicator.

3.3 Data sources and sample characteristics

China's online shopping users of fresh agricultural products are mainly in first-tier and second-tier cities, accounting for more than

80% of the fresh e-commerce consumption market (Yan and Zhang, 2022). Harbin is an important central city in the northeast of China, with a large permanent population, large consumption demand and high consumption level. In recent years, the construction of urban fresh e-commerce service platform has made certain achievements, so it has good representativeness. The data in this paper are obtained from the questionnaire survey conducted by the research group in September and October 2023 in the main city of Harbin. The survey sites are mainly concentrated near government agencies, enterprises and institutions, commercial office buildings and residential communities. In view of the research topic of this paper, the survey subjects are set to consumers over 18 years old who have had online shopping experience. The survey is divided into two stages. The first stage is pre-investigation, the members of the research group firstly distributed 50 questionnaires in Xiangfang District of Harbin for pre-investigation starting from early September 2023. The original questionnaire was revised according to the pre-investigation results, to enhance the clarity of the questionnaire. The second stage is the formal investigation. After that, the sample was obtained by random stratified sampling method. The research team selected the 6 main urban areas of Nangang District, Daoli District, Daowai District, Xiangfang

District, Pingfang District and Songbei District in Harbin as primary sampling units, then in each main urban area, five streets (towns) were randomly selected according to the level of economic development. Finally, in each street (town), one residential community is randomly selected from each of the five directions: east, south, west, north, and center, three samples are randomly selected from each residential community. The investigators distributed 450 paper questionnaires, 420 questionnaires were recovered, and 416 valid questionnaires were finally obtained, with an effective rate of 92.44%. To ensure the authenticity and validity of the survey data, the questionnaire was completed by trained graduate students and senior undergraduates (Table 1).

The gender of the consumers surveyed is equal in proportion to men and women, with 194 and 222 respectively, this data shows that the gender of the respondents is balanced, representing the perspectives of consumers of different genders. The age of the respondents is mainly 25–40 years old, accounting for more than 65%, this age group constitutes the main body of daily purchases, aligning with the positioning of fresh agricultural products toward the primary consumer demographic. Most of the education is college and above level. The high education level is consistent with the reality

TABLE 1 Descriptive statistics of variables.

Variable types	Variable name	Variable measure	Mean value	Standard deviation
Explained variables	Channel Migration Behavior	I am interested in online channel to buy fresh agricultural products	3.519	1.011
		I have the possibility of buying fresh agricultural products online	3.412	1.124
		I would like to recommend online channel purchase experience of fresh agricultural products to others	3.306	1.136
Core explanatory variables	Feature information	Quality of fresh agricultural products online	3.331	1.025
		Packaging standardization	2.672	1.421
		The integrity of certification	3.214	1.039
	Price information	Price fairness	3.653	1.123
		Price stability	3.801	1.055
		Price preferential intensity	3.699	1.109
	Service information	Professional level of customer service	3.358	1.149
		Web design	3.221	1.139
		Satisfaction of reviews	3.236	1.057
	Logistics information	Logistics convenience	3.119	1.026
		Timeliness	3.374	1.135
		Degree of logistics professionalism	2.968	1.152
Mediating variables	Risk perception	Possibility of economic loss	3.311	1.019
		Possibility of dissatisfaction	3.048	1.322
		Possibility of privacy exposure	2.801	1.031
		Possibility of transportation damage	2.886	1.144
		Possibility of poor service	3.177	1.313
Moderating variables	Network affinity	Degree of consumer' web searching capability	4.082	1.226
Control variables	Age	Actual age in 2023	33.165	8.093
	Gender	male or female	0.466	0.499
	Educational level	Education level	15.732	1.528
	Food safety awareness	Food safety cognition level	3.805	1.189

that online consumers are generally young and high educated. The sample mean for food safety awareness was 3.805, indicating that respondents were generally more concerned about food safety issues. In terms of channel migration behavior of fresh agricultural products, the mean value of each question item is greater than 3, which means that respondents mostly show positive attitudes toward online purchase of fresh agricultural products. The sample mean for network affinity is 4.082, indicating that respondents have a high level of online searching. Overall, the sample composition is reasonable and exhibits good representativeness.

4 Empirical results

4.1 Reliability and validity test

In this paper, SPSS19.0 was used to carry out an exploratory factor analysis on the observed variables. The KMO value was used to test the simple correlation coefficient and partial correlation coefficient between the variables, which can be used as a basis for judging whether the original variables can be applied to factor analysis. A total of six factors were extracted for exploratory factor analysis using orthogonal rotation with maximum variance method. The results showed that the KMO value was 0.841, and the Bartlett's test of sphericity was significant, reaching the significance level of 1‰. The cumulative variance contribution rate was 61.082%, which met the basic requirement of 50%. These can indicate that the structural validity of the questionnaire design of this study is proper and the correlation between the dimensions and the total scale is statistically significant. Meanwhile, this paper uses the Cronbach's α coefficient method to measure the internal consistency between the items in the questionnaire scale. The Cronbach's α coefficient of each item is greater than 0.7, which indicates that the overall reliability level of the questionnaire scale is high. In addition, validity tests generally take the method of validated factor analysis to calculate the standardized factor loading coefficients of each variable. From this, the CR and AVE values of each dimension are derived. The results of the validated factor analysis in this paper indicated that the CR values of all latent variables exceeded 0.7 and the AVE values exceeded 0.5, which can also indicate that the observed variables have better convergent validity and internal consistency.

4.2 Hypothesis testing

4.2.1 The main effect of hypothesis test

According to the conceptual model constructed in Figure 1 of this paper, SPSS 19.0 and AMOS 22.0 software were used to carry out an empirical analysis of the factors influencing consumers' channel migration behavior of fresh agricultural products. Paths were explored for the 416 questionnaire data samples collected, and the results of the path estimation coefficients of the main effects are shown in Figure 2. Each fitting index of the structural equation model meets the requirements and has a good fit, and the test results are not listed here due to space limitations. The coefficient of feature information is significantly positive at the 5% level, which indicates that the feature information of online fresh agricultural products positively influences

channel migration behavior of fresh agricultural products, proving that hypothesis H1a is valid. The coefficient of price information is significantly positive at the 1% level, which indicates that the price information of online fresh agricultural products positively influences channel migration behavior of fresh agricultural products, proving that hypothesis H1b is valid. The coefficient of service information is significantly positive at the 5% level, which indicates that service information positively influences channel migration behavior of fresh agricultural products, proving that hypothesis H1c is valid. The coefficient of logistics level is significantly positive at the 10% level, which indicates that logistics information positively influences channel migration behavior of fresh agricultural products, proving that hypothesis H1d is valid.

The standardized path coefficient between feature information and risk perception is −0.263, which passes the test at the 1% level of significance. This suggests that the more comprehensive consumers' information about the features of online fresh agricultural products is, the weaker their risk perception is. The standardized path coefficient between price information and risk perception is −0.322, which is also significant at the 1% level. The higher the price fairness and the greater the discount of online fresh agricultural products is, the weaker the risk perception of consumers is. The standardized path coefficient between service information and risk perception is −0.234, which is significant at the 5% level. The more comprehensively consumers understand service information, the weaker their risk perception is. The standardized path coefficient between logistics information and risk perception is −0.201, which is significant at the 10% level, indicating that the more consumers know about logistics information, the weaker their risk perception is. Therefore, hypotheses H2a~H2d are valid.

In addition, the standardized path coefficient between consumer risk perception and channel migration behavior of fresh agricultural products is −0.316, which is significant at the 5% level. This shows that consumers' risk perception directly affects their channel migration behavior of fresh agricultural products of fresh agricultural products, proving that hypothesis H3 is valid. Nonetheless, risk perception cannot fully explain consumers' channel migration behavior of fresh agricultural products of fresh agricultural products.

4.2.2 The mediation effect of risk perception

Risk perception is the mediating variable in this study. For the test of this variable, we applied the effect test proposed which is widely used in related studies. Based on the Process Bootstrap program, this paper sets the sample size to 1,500, chooses the non-parametric percentile method with bias correction, and sets the confidence level of the confidence interval to 95%. The test results of the mediating effect are shown in Table 2. With risk perception as the mediating variable, in the path of feature information to channel migration behavior of fresh agricultural products, the confidence interval of the Bootstrap test for total effect is (0.405, 0.437); the confidence interval of the Bootstrap test for the indirect effect is (0.051, 0.060); the confidence interval of Bootstrap test for direct effect is (0.288, 0.345). The results above suggest that risk perception plays a partial mediating effect between feature information and channel migration behavior of fresh agricultural products. Similarly, risk perception also plays a partial mediating effect between price information and consumers' channel migration behavior of fresh agricultural products. The same
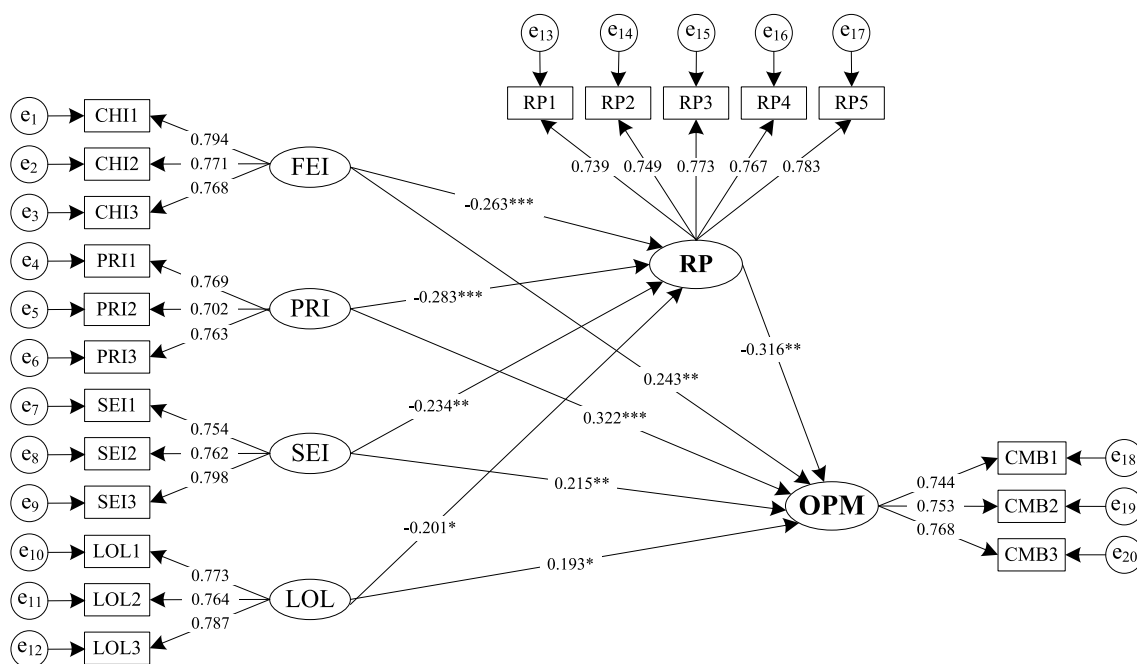
FIGURE 2
The main effect of path coefficient estimates. Note: ***denote $P < 0.01$; **denote $P < 0.05$; *denote $P < 0.1$.

TABLE 2 The mediation effect of risk perception test.

Effect of path	Total effect		Indirect effect		Direct effect	
	Lower bound	Upper bound	Lower bound	Upper bound	Lower bound	Upper bound
FEI → RP → CMB	0.405	0.437	0.051	0.060	0.288	0.345
PRI → RP → CMB	0.388	0.411	0.047	0.058	0.295	0.340
SEI → RP → CMB	0.305	0.381	0.035	0.056	0.243	0.299
LOI → RP → CMB	0.363	0.401	0.027	0.041	0.271	0.313

is true for its effect between service information and consumers' channel migration behavior of fresh agricultural products. It also plays a partial mediating effect between logistics information and consumers' channel migration behavior of fresh agricultural products. In summary, H4a-H4d are validated.

4.2.3 The moderation effect of network affinity

The test of moderating effect has limited application in structural equation modeling, and the method of multi-cluster analysis is mainly utilized in this study. Its principle is to put the sample group before the return path, and then compare and analyze whether there is any difference in the path results, which can also be used for moderating effect analysis. In this paper, the sample consumers are grouped according to high network affinity and low network affinity. The test results of the moderating effect of network affinity are shown in Table 3. When the network affinity is high, the product information and platform information have a positive contribution to reducing consumer risk perception. The standardized path coefficients are 0.141, 0.179, 0.126, and 0.148 respectively, which are significant at the level of 5%, 1%, 5, 5%, respectively. In conclusion, the higher the degree of consumers' web searching capability is, the less risk consumers sense, so network affinity can effectively mitigate the

negative effect of risk perception. Therefore, hypotheses H5a–H5d are verified.

5 Discussion

The impact mechanism of consumers' migration behavior of fresh agricultural products is a complex issue, that requires deeper analysis to elucidate how to better promote the migration of fresh agricultural product consumption to online channels. This study took consumers' migration behavior of fresh agricultural products as the research object and explored the relevant factors influencing this behavior. We considered product information and platform information as two key determining factors, this choice aligns with consumers' current shopping habits, as they rarely make decisions based on a single factor but rather tend to consider various aspects of product information and platform information. Based on the SOR model, and form the perspective of information dissemination, we proposed a conceptual model to examine the links between online information, risk perception and consumers' migration behavior in online fresh agricultural products purchases, as well as the moderating effect of network affinity. Among them, online information including product

TABLE 3 The moderation effect of network affinity.

Effect of path	Network affinity	
	Low	High
CHI → RP	0.115 (0.077)	0.141**(0.063)
PRI → RP	0.152**(0.070)	0.179***(0.054)
SEI → RP	0.117*(0.067)	0.126**(0.057)
LOL → RP	0.129*(0.069)	0.148**(0.072)

$***p < 0.01, **p < 0.05, *p < 0.1.$

information, platform information, and network density are stimuli; risk perception is the body; channel migration behavior of fresh agricultural products is the response. Previous research has mostly emphasized the role of product information and platform information in online channels from the perspective of information dissemination, or highlighted the need to improve consumers' information search abilities. However, they have not examined consumer network affinity from the standpoint of information acquisition as a factor that determines the relationship between online information and risk perception. This paper extends current research and provides theoretical support for the field. At the same time, the study presented in this paper offers a replicable theoretical framework for future discussions on consumer channel migration behavior, enriching the literature on consumer online consumption behavior, and expanding the theoretical research on consumer purchasing channel migration behavior.

According to the study, online information and risk perception are key factors influencing consumers' migration behavior toward online purchases of fresh agricultural products. On the one hand, sound product information and platform information can help to reduce consumers' risk perceptions toward online purchases of fresh agricultural products. The reason is that from the perspective of the capability approach, the rationale for online information to reduce consumer risk perceptions is to enhance consumers' cognitive and choice abilities, which may reduce risk perceptions by fostering a greater sense of understanding and kindness. This expands upon previous research on fresh e-commerce platforms and consumer behavior regarding fresh agricultural products (Cang and Wang, 2021; Guo H. et al., 2022). On the other hand, consistent with many studies, consumers' risk perception is crucial in determining their shifting consumption decisions, and lower risk perception promotes more consumption behavior, this viewpoint aligns with the findings of Munoz-Mazon et al. (2021) and Zhang et al. (2022) regarding consumers' risk perception (Munoz-Mazon et al., 2021; Zhang et al., 2022). As expected, reducing risk perception contributes to a higher chance of consumers' migration to online shopping of fresh agricultural products.

The mediating effect of risk perception reflects how consumers make channel migration behavior of fresh agricultural products of fresh agricultural products based on product information and platform information. This result extends previous research on the mediating effects of risk perception (Zhang et al., 2022), elucidating how product information and platform information influence consumers' channel migration behavior, enriching the study of antecedents and outcome variables of risk perception (Zhang et al., 2022). Overall, this result suggests that online information helps reduce consumer risk perception. If consumers' risk perception is

reduced, they will be more likely to turn to online channels to buy fresh agricultural products. This aligns with the findings of Hue et al. (2019), comprehensive online information in online channels can reduce consumers' risk perception, thereby enhancing consumers' willingness to engage in online consumption (Hue et al., 2019). In addition, this verification is practical because it can help fresh e-commerce companies improve product information and platform information on online channels. In the future, fresh food e-commerce companies should further strengthen the construction of online information resources, enhance the depth and experience of online information interaction, and improve the usefulness and effectiveness of information.

The moderating effect enables us to recognize the effect of network affinity between product information, platform information and risk perception. It should be noted that information transmission is a process involving both the supply and demand sides of the market. Effective information acquisition not only requires online sellers to make efforts in information disclosure and transmission, but also depends on whether consumers can obtain this information. This discovery enriches previous research on online consumer behavior by verifying the crucial role of network affinity, and provides empirical evidence for exploring consumer channel migration behavior. In the moderating effect of network affinity, we also find that consumers with high network affinity have a more pronounced effect than those with low network affinity. This result is consistent with a previous study (Wang and Gao, 2020). By emphasizing this difference, it helps to drive research on consumer heterogeneity and extend it to online consumption of fresh agricultural products, thus filling the gaps in previous studies. Future fresh e-commerce can develop differentiated marketing strategies based on the closeness of the consumer network, to better meet the needs of consumers. The research findings of this article can contribute to the sustainable development of online marketing for the e-commerce of fresh agricultural products.

6 Conclusions and suggestions

Online purchase has become the new trend of fresh agricultural products consumption. it is vital to effectively identify the key factors influencing consumers' channel migration behavior of fresh agricultural products of fresh agricultural products and their role mechanisms. Based on the SOR theory, this paper constructs a conceptual model of the factors influencing consumers' channel migration behavior of fresh agricultural products of fresh agricultural products from the perspectives of information acquisition and risk perception. It empirically analyses the factors influencing such behavior and how these factors work by structural equation modeling with 416 valid questionnaires obtained from the field research. The results indicate three conclusions. (1) Product information and platform information significantly affect consumers' channel migration behavior of fresh agricultural products. Product information including feature information and price information has a positive influence on consumers' channel migration behavior of fresh agricultural products. The same is true for such behavior and the platform information including service information and logistics information. (2) Risk perception plays a partial mediating role in the influence of product information variables and platform information variables on consumers' online purchasing and migration behavior of

fresh agricultural products. (3) Network affinity negatively moderates the causal relationship between product information and risk perception as well as that between platform information and risk perception. The effect is more pronounced for consumers with high network affinity than consumers with low network affinity.

From the policy point of view, this paper can provide ideas and methods for fresh e-commerce to optimize marketing strategies, so as to promote the economic and social benefits of fresh agricultural products online market and help the sustainable development of fresh e-commerce. We put forward suggestions as follows. First, quality and safety should be ensured and product certification should be improved. It is necessary to improve product quality and safety evaluation standards, strengthen the online market access system, enhance online quality supervision of fresh agricultural products, and establish a sound product certification and quality traceability system to deliver more quality and safety information to consumers. Second, promotions should be increased to attract consumers. The online platform can push coupons to provide discounts and diversified payment methods according to different consumer needs. Third, customer service training should be strengthened to establish a good reputation. Enterprises should cultivate professional online customer service personnel to provide patient and detailed answers, timely processing of quality feedback and after-sales return and exchange services. In addition, improving the after-sales evaluation system and information disclosure system including online feedback is necessary. Fourth, the level of logistics should be improved to realize quality and efficiency improvement. Fresh e-commerce should work on the "last mile" distribution link to facilitate consumers to choose the delivery time and place more flexibly, and online platforms with the conditions can build their own cold chain logistics and distribution centers or build a multi-level and multi-center cooperative distribution system through resource sharing and integration. Finally, the difference in network affinity is a concern. Online shopping knowledge should be popularized to consumers with low network affinity through multiple channels to stimulate their online purchase interest with online purchase advantages. For consumers with high network affinity, online product information should be pushed in time. For example, the more consumers interact with merchants, the greater price discount can be enjoyed to ensure the loyalty and stickiness of these consumers.

This paper constructs a conceptual model of online purchasing migration behavior of fresh agricultural products, and explores how information acquisition and risk perception affect consumers' channel migration behavior of fresh agricultural products, it is helpful to expand the theoretical research on consumer purchasing channel migration. At the same time, the research conclusion provides decision-making reference for improving marketing strategies and expanding online economic benefits, and provides suggestions for the sustainable development of e-commerce of fresh agricultural products. We are committed to providing useful experience and reference for sustainable development of fresh e-commerce in the world, especially for developing countries. There are still some research limitations. First, there are many online consumption platforms for fresh agricultural products, and their target consumer groups also have different characteristics. However, this study has not considered the specific types of online consumption channels for fresh agricultural products. Secondly, the sample consumers of this study are limited to the Main City of Harbin, Heilongjiang Province, but whether the

research conclusions have the same applicability for other areas remains to be tested. Finally, the sinking market is expected to be the primary battleground for fresh food e-commerce in the future, so the future research on the growth space for online consumption of fresh agricultural products in cities, towns and rural areas would be helpful.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

Ethical approval was not required for the study involving humans in accordance with the local legislation and institutional requirements. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent to participate in this study was not required from the participants in accordance with the national legislation and the institutional requirements.

Author contributions

NC: Writing – original draft, Validation, Funding acquisition. JD: Writing – original draft, Conceptualization. XF: Writing – review & editing, Investigation, Conceptualization. DZ: Writing – review & editing, Methodology, Data curation. ML: Writing – review & editing, Methodology, Data curation. JS: Writing – review & editing, Investigation.

Funding

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

References

Alrawad, M., Lutfi, A., Alyatama, S., Adel, A. K., Alsoboa, S. S., Almaiah, M. A., et al. (2023). Assessing customers perception of online shopping risks: a structural equation modeling–based multigroup analysis. *J. Retail. Consum. Serv.* 71:103188. doi: 10.1016/j.jretconser.2022.103188

Bhatnagar, P., Scarborough, P., Kaur, A., Dikmen, D., Adhikari, V., and Harrington, R. (2021). Are food and drink available in online and physical supermarkets the same? A comparison of product availability, price, price promotions and nutritional information. *Public Health Nutr.* 24, 819–825. doi: 10.1017/S1368980020004346

Bodur, H. O., Klein, N. M., and Arora, N. (2015). Online price search: impact of price comparison sites on offline price evaluations. *J. Retailing* 91, 125–139. doi: 10.1016/j.jretai.2014.09.003

Brinda, S., Sahil, R., Abhishek, B., and Sofia, S. (2022). An empirical analysis of facilitators and barriers to the hybrid work model: a cross-cultural and multi-theoretical approach. *Pers. Rev.* 51, 1990–2020. doi: 10.1108/PR-02-2022-0176

Cang, Y., and Wang, D. (2021). A comparative study on the online shopping willingness of fresh agricultural products between experienced consumers and potential consumers. *Sustain. Comput. Infor. Syst.* 30:100493. doi: 10.1016/j.suscom.2020.100493

Chen, R., and Li, Y. (2023). Research on the influencing factors of the usefulness of online reviews moderation effects of brand reputation and product type. *Oper. Res. Manag. Sci.* 32:6563.

Chen, L., and Wang, Y. (2018). Discussion on application of Chinese CPI compiling method in online price index. *Stat. Decis.* 34, 32–36. doi: 10.13546/j.cnki.tjyjc.2018.07.007

Cheng, L., Zhang, J., and He, K. (2019). Analysis on the influence of network embeddedness and risk perception on farmers' adoption behavior of green agricultural tillage technology——based on the survey data of 615 farmers in Hubei Province. *Resour. Environ. Yangtze Basin* 28, 1736–1746.

Dutta, C. B., and Das, D. K. (2017). What drives consumers' online information search behavior? Evidence from England. *J. Retail. Consum. Serv.* 35, 36–45. doi: 10.1016/j.jretconser.2016.10.015

Guo, J., Hao, H., Wang, M., and Liu, Z. (2022). An empirical study on consumers' willingness to buy agricultural products online and its influencing factors. *J. Clean. Prod.* 336:130403. doi: 10.1016/j.jclepro.2022.130403

Guo, H., Sun, X., Pan, C., Xu, S., and Yan, N. (2022). The sustainability of fresh agricultural produce live broadcast development: influence on consumer purchase intentions based on live broadcast characteristics. *Sustain. For.* 14:7159. doi: 10.3390/su14127159

Han, S., and Kang, S. (2022). Examining the moderating role of purchase experience in the relationship between perceived risk and purchase intention of online used goods. *J. Inform. Technol. Serv.* 21, 123–140. doi: 10.9716/KITS.2022.21.4.123

Hsieh, M. T., and Tsao, W. C. (2014). Reducing perceived online shopping risk to enhance loyalty: a website quality perspective. *J. Risk Res.* 17, 241–261. doi: 10.1080/13669877.2013.794152

Hue, D. T., Nguyen, L. T., and Vu, H. T. (2019). With whom do consumers interact?: effects of online comments and perceived similarity on source credibility, content credibility, and personal risk perception. *J. Soc. Mark.* 10, 18–37. doi: 10.1108/JSOCM-02-2019-0023

Jiang, Y., Lai, P., Yang, C., and Wang, X. (2023). Exploring the factors that drive consumers to use contactless delivery services in the context of the continued COVID-19 pandemic. *J. Retail. Consum. Serv.* 72:103276. doi: 10.1016/j.jretconser.2023.103276

Jin, X. (2021). The impact of risk perception on consumer purchase intention in an online retail context–a channel analysis based on consumer trust. *J. Commer. Econ.* 40, 70–73.

Jun, S. P., and Park, D. H. (2016). Consumer information search behavior and purchasing decisions: empirical evidence from Korea. *Technol. Forecast. Soc Change* 107, 97–111. doi: 10.1016/j.techfore.2016.03.021

Lazaroiu, G., Negurita, O., Grecu, I., Grecu, G., and Mitran, P. C. (2020). Consumers' decision-making process on social commerce platforms: online trust, perceived risk, and purchase intentions. *Front. Psychol.* 11:890. doi: 10.3389/fpsyg.2020.00890

Lee, D., Moon, J., and Ryu, M. H. (2019). The effects of extrinsic cues on online sales of fresh produce: a focus on geographical Indi-cations. *Cah. Agric.* 28:13. doi: 10.1051/cagri/2019014

Li, W., Dan, Q., Chi, M., and Wang, W. (2021). Influence of price level and perceived price dispersion on consumer information search behaviour: moderating effect of durables and consumables. *Sustain. For.* 13:2105. doi: 10.3390/su13042105

Li, Y., Geng, L., Chang, Y., and Ning, P. (2023). Research online and purchase offline: the disruptive impact of consumers' online information on offline sales interaction. *Psychol. Mark.* 40, 2642–2652. doi: 10.1002/mar.21902

Li, Y., and Zhang, Y. (2018). Investigation and analysis on the influencing factors of consumers' trust to fresh agricultural products in e-commerce. *Adv. Intell. Syst. Interact. Appl.* 686, 450–456. doi: 10.1007/978-3-319-69096-4_62

Lin, J., Li, T., and Guo, J. (2021). Factors influencing consumers' continuous purchase intention on fresh food e-commerce platforms: an organic foods-centric

empirical investigation. *Electron. Commer. Res. Appl.* 50:101103. doi: 10.1016/j.elerap.2021.101103

Liu, D., and Wu, D. (2020). Consumer trust in purchasing fresh agricultural products online based on the signal theory: take the coastal city of Dalian for example. *J. Coast. Res.* 104, 711–716. doi: 10.2112/JCR-SI104-123.1

Ma, H. (2019). A study of the factors influencing consumer fresh produce app channel migration–empirical evidence based on the PPM theoretical model. *J. Commer. Econ.* 38, 84–87.

Mahapatra, S., and Mishra, A. (2021). "Crying over spilt milk?" effect of post-consumption dissonance on coping behavior for online purchases. *Int. J. Consum. Stud.* 46, 1035–1054. doi: 10.1111/ijcs.12744

Munoz-Mazon, A., Orea-Giner, A., Munoz, J. J. F., Santiago, C., and Fuentes-Moraleda, L. (2021). Risk perception before travelling: solutions for consumers with vulnerabilities. *J. Serv. Mark.* 35, 791–806. doi: 10.1108/JSM-07-2020-0304

Pu, X., Chai, J., and Qi, R. (2022). Consumers' channel preference for fresh foods and its determinants during COVID-19-evidence from China. *Healthcare* 10:2581. doi: 10.3390/healthcare10122581

Ren, Y., and Le, J. (2018). Influencing factors of consumers' online shopping willingness for fresh agricultural products. *Acta Agric. Shanghai* 34, 138–144. doi: 10.15955/j.issn1000-3924.2018.02.25

Shariffuddin, N. S. M., Azinuddin, M., Yahya, N. E., and Hanafiah, M. H. (2023). Navigating the tourism digital landscape: the interrelationship of online travel sites' affordances, technology readiness, online purchase intentions, trust, and E-loyalty. *Heliyon* 9:19135. doi: 10.1016/j.heliyon.2023.e19135

Tao, A., Wang, J., and Wang, J. (2021). Research on generation mechanism of consumer consumption behavior of webcast e-commerce. *Enterp. Econ.* 40, 64–71. doi: 10.13529/j.cnki.enterprise.economy.2021.11.007

Teng, W., and Ming, T. (2023). Exploring consumer perceived risk and purchase intention of water-saving appliances: a moderated dual-mediation model. *Front. Psychol.* 13:1099897. doi: 10.3389/FPSYG.2022.1099897

Tian, K., Xuan, W., Haom, L., Wei, W., Li, D., and Zhu, L. (2022). Exploring youth consumer behavior in the context of mobile short video advertising using an extended stimulus–organization–response model. *Front. Psychol.* 13:933542. doi: 10.3389/FPSYG.2022.933542

Tung, S. J., Shih, C., Wei, S., and Chen, Y. H. (2012). Attitudinal inconsistency toward organic food in relation to purchasing intention and behavior: an illustration of Taiwan consumers. *Br. Food J.* 114, 997–1015. doi: 10.1108/00070701211241581

Wang, J., and Bu, Y. (2021). The evolutionary mechanism of urban and rural residents' migration intention in purchasing channels of fresh agricultural products: an empirical analysis from micro-survey data. *Rural Econ.* 39, 109–117.

Wang, J., Bu, Y., and Wang, S. (2022). Migration intention of consumers' purchasing channels of fresh agricultural products and its influence. *Mechanism. J. Nanjing Agric. Univ.* 22, 171–182. doi: 10.19714/j.cnki.1671-7465.2022.0031

Wang, Y., Chen, J., and Fan, W. (2021). The influence of data privacy sensitivity on channel migration intention of consumers. *Chin J. Manag.* 18, 1212–1219.

Wang, Z., Du, B., and Qu, G. (2016). A study of consumers' online shopping channel choice based on perceived value–the moderating role of product involvement. *Consum. Econ.* 32, 91–97.

Wang, J., and Gao, Z. (2020). A study of online fresh purchase intention based on individual behavioral characteristics of consumers: the mediating role of perceived risk and the moderating role of individual innovation. *Guizhou Soc. Sci.* 41, 119–127. doi: 10.13713/j.cnki.cssci.2020.09.017

Wang, J., and Jia, X. (2023). Click it, and increase hedonic consumption ratio: how does online shopping improve the long-term subjective well-being of consumers? *J. Consum. Behav.* 22, 235–252. doi: 10.1002/CB.2086

Wang, X., and Zhang, J. (2020). Factors influencing Chinese online shopping distributions of fresh agricultural products. *J. Distrib. Sci.* 18, 53–63. doi: 10.15722/JDS.18.10.202010.53

Watanabe, E. A. D. M., Alfinito, S., and Barbirato, L. L. (2021). Certification label and fresh organic produce category in an emerging country: an experimental study on consumer trust and purchase intention. *Br Food J.* 123, 2258–2271. doi: 10.1108/BFJ-09-2020-0808

Wu, Y., and Huang, H. (2023). Influence of perceived value on consumers' continuous purchase intention in live-streaming e-commerce–mediated by consumer trust. *Sustain. For.* 15:4432. doi: 10.3390/SU15054432

Wu, S., and Zhu, J. (2015). The impact of experience quality on customer behavioral intentions–conceptual framework and hypotheses. *Jianghuai Trib.* 58, 48–53. doi: 10.16064/j.cnki.cn34-1003/g0.2015.03.005

Xie, C., Tian, X., Feng, X., Zhang, X., and Ruan, J. (2022). Preference characteristics on consumers' online consumption of fresh agricultural products under the outbreak of COVID-19: an analysis of online review data based on LDA model. *Procedia Comput. Sci.* 207, 4486–4495. doi: 10.1016/j.procs.2022.09.512

Xu, X., Zhao, Y., and Shi, R. (2022). The adoption of SOR theory in the field of library and information science in China: traceability, application and future prospects. *Inform. Doc. Serv.* 43, 98–105.

Yan, B., Chen, X., Cai, C., and Guan, S. (2020). Supply chain coordination of fresh agricultural products based on consumer behavior. *Comput. Oper. Res.* 123:105038. doi: 10.1016/j.cor.2020.105038

Yan, Q., and Zhang, C. (2022). Research on the consumers' channel migration intention when purchasing fresh agricultural products after the pandemic of COVID-19. *Inflamm. Res.* 42, 1–8.

Yang, X., Li, Y., and Fan, D. (2021). Channel selection strategies for fresh agricultural products based on consumer perceived value. *World Agric.* 43:56-65+90. doi: 10.13856/j.cn11-1097/s.2021.11.006

Yang, R., Ramsaran, R., and Wibowo, S. (2022). The effects of risk aversion and uncertainty avoidance on information search and brand preference: evidence from the Chinese dairy market. *J. Food Prod. Mark.* 28, 257–275. doi: 10.1080/10454446.2022.2106606

Yuan, S., Liu, L., Su, B., and Zhang, H. (2020). Determining the antecedents of mobile payment loyalty: cognitive and affective perspectives. *Electron. Comm. Res. Appl.* 2020:10097. doi: 10.1016/j.elerap.2020.100971

Yue, L., Liu, Y., and Wei, X. (2017). Influence of online product presentation on consumers' trust in organic food a mediated moderation model. *Br. Food J.* 119, 2724–2739. doi: 10.1108/BFJ-09-2016-0421

Zhang, W., Sun, L., Wang, X., and Wu, A. (2022). The influence of AI word-of-mouth system on consumers' purchase behaviour: the mediating effect of risk perception. *Syst. Res. Behav. Sci.* 39, 516–530. doi: 10.1002/sres.2871

Zhang, W., Zhang, W., and Daim, T. U. (2020). Investigating consumer purchase intention in online social media marketing: a case study of Tiktok. *Technol. Soc.* 74:102289. doi: 10.1016/j.techsoc.2023.102289

Zhao, L. (2022). Research on influence factors of online purchase intention toward fresh agricultural products based on social cognition and perceived value. *J. Sichuan Agric. Univ.* 40, 137–144.

Zhu, W., Yao, N., Ma, B., and Wang, F. (2018). Consumers' risk perception, information seeking, and intention to purchase genetically modified food: an empirical study in China. *Br. Food J.* 120, 2182–2194. doi: 10.1108/BFJ-11-2017-0622

Zia, A., Alzahrani, M., Alomari, A., and AlGhamdi, F. (2022). Investigating the drivers of sustainable consumption and their impact on online purchase intentions for agricultural products. *Sustain. For.* 14:6563. doi: 10.3390/su14116563