

Food Safety Traceability Mechanism from the Perspective of Sustainable Development of E-Commerce Platform

Xin Zhang, M.Sc

Wenan Pan, M.Sc

Jian He, M.Sc

Xin Zhang, Lecturer, College of Business, Jiaxing University, Jiaxing314001, Zhejiang, China. Wenan Pan, Lecturer, School of Business Administration, Zhejiang Gongshang University, Hangzhou310035, Zhejiang, China. Jian He, Lecturer, Normal college, Jiaxing University, Jiaxing314001, Zhejiang, China

Correspondence LecZhang;mwoldp@163.com

Objectives: Food safety issues were related to residents' consumption and health, but also related to the sustainable development of the e-commerce industry. With the rapid development of e-commerce and the continuous improvement of the consumption level of urban and rural residents, food safety issues present new risks and hidden dangers. **Methods:** This article's research on the information traceability of food safety in the e-commerce environment will help improve the relevant research system and provide reference for relevant policy formulation. Based on the definition of related concepts and connotations, it constructs a theoretical and logical framework for the retrospective research of food safety information in an e-commerce environment, analyzes the path of food safety issues, and comprehensively analyzes the behavior selection and decision-making of food safety related stakeholders. **Results:** According to the research on the management and control mechanism of the impact of e-commerce on food safety, it is proposed that e-commerce can help improve the level of food safety control. Based on the results of the supervision and random inspection of e-commerce food safety samples, the current situation, and risks problems of food safety in the e-commerce environment are analyzed with combining the questionnaire survey data. **Conclusion:** The article built a food safety key traceability point system, determined the key traceability points of food safety in the e-commerce environment through AHP method, provided theoretical references for improving the food safety information traceability research in the e-commerce environment, and put forward corresponding policy recommendations.

Keywords: e-commerce platform, food safety, traceability system, platform sustainable development

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Food safety is a general concern. The economics of food safety began in the 1960s. Chinese scholars have systematically studied food safety issues from different perspectives, providing theories for food safety supervision and policy making. Specific factors affecting food safety are inseparable from the main behavior of food safety production. Foreign scholars mostly conduct research on the

management and implementation of enterprise safety production. Scholars such as You-hua Chen¹ and E.De Bocck² have evaluated the food safety climate and food safety based on surveys of local e-commerce companies such as Belgium. The correlation between the organizational (and related) characteristics of the industry, and the impact of organizational characteristics on the food safety management system is measured;

Zhou Jiehong (2017), Tong Xia (2014), and Li Shijie³ studied the seller's perspective. The seller's cognition, production behavior, drug application behavior, cost-benefit considerations and other behaviors affect food safety; Zhong Zhen⁴ and Zhang Bei⁵ based on industry supply From the perspective of the chain, it has studied the impact of supply chain, industrial organization model, corporate safety traceability, and leading enterprise cooperation model on food safety; Zheng Fengtian⁶ and other scholars divided the judgment of edible food safety into hard indicators and soft indicators. It also analyzes the factors that affect the safety of edible food from two dimensions, including hard indicators of input, processing, and markets, and soft indicators such as certification system, legal system construction, and information construction.

In the research of food safety evaluation methods, foreign scholars in China have used analytic hierarchy process, factor analysis method, grey comprehensive evaluation method, data envelopment analysis method, comprehensive index analysis method and other methods to carry out quantitative research on food safety level. And qualitative analysis. AHP. Chao, X⁷ uses theoretical analysis, combined with analytic hierarchy process and comprehensive evaluation index system to analyze, and derives the comprehensive index scoring formula of each brand food. Geng⁸ et al. proposed an extreme learning machine predictive modeling method based on Analytic Hierarchy Process (AHP), and constructed a multi-input and multi-output optimized prediction model for food safety inspection data. Ting Chen⁹ and other scholars have established a comprehensive evaluation method based on food waste and feed detection data by effectively integrating fuzzy mathematics, that is, the entropy method (EM) and the analytic hierarchy model. And put forward that the analytic hierarchy process can effectively overcome the shortcomings of traditional single-factor evaluation, and provide qualitative and quantitative advantages for expert investigation and basic data research. Cai Qiang¹⁰ adopted the HACCP method to establish a food safety evaluation index system, used the analytic hierarchy process to improve the random initial in the neural network algorithm, adopted the

HACCP method to establish a food safety evaluation index system, and used the analytic hierarchy process to improve the random initialization method calculation in the neural network algorithm Weight, established a food safety evaluation model. Factor analysis method. Li, X.¹¹ designed a set of questionnaires on influencing factors affecting food safety and established a comprehensive food safety satisfaction index system, including 20 first-level indicators and previous research results and questionnaire survey results, and used factor analysis to analyze food Empirical research on safety satisfaction index. Grey comprehensive evaluation method. Y Liu (2017) studied the application of the gray comprehensive evaluation method in the promotion of the e-commerce industry, and used the gray comprehensive evaluation method to evaluate the safety risk of edible fungi, dairy products, meat, aquatic products and other categories of food.

In terms of applied research on the HACCP system, the current literature mainly focuses on the design of safety management schemes, behavioral research and safeguard systems. ①In terms of behavioral research, at the level of behavioral motivation, the main motivations for enterprises to apply the HACCP system are goodwill pressure, internal efficiency, external requirements and good practices, etc. (Spencer, 2000). Although almost all food safety standards in the European market are based on HACCP was established as a guideline (Denyse, 2011). Even the British dairy industry has enforced HACCP certification since 1995, but not all food production and processing enterprises are forced to implement it. Such enterprises adopt the HACCP system because of its Own high standards, customer needs and industry ethics; at the level of behavior implementation, the HACCP system will face some specific obstacles in the implementation of the entire supply chain, for SMEs, lack of expertise and funding The lack of such resources is an obstacle that must be overcome to effectively implement the HACCP system. ②In terms of application and program design, the HACCP system is widely used in fields including livestock and poultry breeding, vegetable production, and food processing. Li Baoquan¹² applies the principle of HACCP to the production process of pollution-free meat rabbits,

based on the production of pollution-free meat rabbits. Process significant hazard analysis, and build a HACCP plan for the rabbit production process to ensure that the production process is standardized and pollution-free; Huang Jing¹³ applies the HACCP system to the beef cattle slaughter process, and determines the key hazards in the beef slaughter process based on the HACCP principle. Based on this, a Web-based beef cattle slaughter safety traceability system was designed; Song Yongping (2018) studied the application of HACCP principles in the production and processing of buckwheat tea, and conducted an effect evaluation. The evaluation results show that the company is implementing HACCP. After the HACCP system was implemented, the qualification rate of products was effectively improved, consumer satisfaction was improved, and customer maintenance costs were reduced.

In terms of food circulation model, scholars such as Wang Xuhui¹⁴ studied the framework of the online and offline food circulation model in the new era, analyzed the current development trend of online and offline food circulation, and put forward relevant policy recommendations; Zhao Xiaofei¹⁵ sorted out the process and characteristics of the food distribution channel reform. It is believed that the current food distribution is affected by external factors such as consumer purchase patterns, economic and other external environmental changes, the introduction of new technologies, and internal factors such as channel rights, transaction costs and value chain adjustments. In the future, there will be changes in strategic channels, channel structure, channel subjects and channel relationships. Liu Gang¹⁶ started from the perspective of fresh and live food, studied the dynamic mechanism of the evolution of the food circulation model, and analyzed the fresh and live food e-commerce model, the fresh and live food urban distribution model, the fresh and live food chain business model, and the production and marketing of fresh and live food. Research on the innovation of alliance mode; Liu Gang (2013) started from the perspective of cooperatives, based on the importance of e-commerce cooperatives in the fresh food circulation system, innovatively proposed direct sales models, docking models with retailers, and docking models with leading companies. In terms of the related technology of

food circulation, Li Lin¹⁷ based on RFID technology the impact of the application of the app on the double loss in the circulation of fresh and live food, focusing on comparative analysis of the decision-making of members at all levels in technology investment, pricing and order.

Chinese scholars' research on e-commerce is mainly carried out from the aspects of development model, informatization, industrial clusters, and food circulation. In terms of research on the development model of e-commerce, foreign research on e-commerce models has gradually matured. In the 1990s, Mayfair Farm in Texas, USA was the first farm in the world to apply e-commerce. The Sansuke Nong Club is the first farm in Asia to apply e-commerce. In terms of service drive, regional differences, platform innovation etc., the development model of e-commerce has been studied by Chinese scholars such as Chen Yi¹⁸, Dan Bin¹⁹, and Wang Liang (2016). The current food e-commerce model in China can be roughly divided into B2B, B2C, C2C and its derivative B2B2C, F2C2B and other multiple models, which are common. Problems such as low level and weak anti-risk ability.

In terms of e-commerce case studies, Awasthi, A.²⁰ from the perspective of social innovation, based on the survey data of 275 "Taobao Village" merchants in Lishui City, Zhejiang Province, using hierarchical regression analysis to analyze marketing factors, individual spontaneous innovation factors, and An empirical analysis of the influence of external social innovation factors on the development of e-commerce in "Taobao Village"; Lombardi, R.²¹ based on relevant theories and the case practice of Junpu Village, believes that e-commerce associations can strengthen the collective efficiency of Taobao Village and the external economy of the cluster.

In terms of e-commerce supply chain research, Dan Bin (2014) constructed a dual-channel supply chain model consisting of a manufacturer and a retailer in an e-commerce environment. From the perspective of cooperation between electronic channels and traditional channels, he studied the compensation strategy for the coordination of dual-channel supply chains to ensure a win-win situation for supply chain members under both e-commerce and traditional channels.

In terms of sustainable development, Kannan Govindan (2018) starts from the perspective of sustainable development and believes that the methods of processing, transportation and consumption have a major impact on the entire food supply chain. In order to achieve sustainable consumption and production, stakeholders in the food industry should coordinate. They are consistent, and put forward institutional theory, dynamic theory and stakeholder theory to drive the development of the food supply chain; Manfredi De Fazio (2016) analyzed in detail the length of the e-commerce industry supply chain for the development of the e-commerce industry and the sustainability of the e-commerce industry. The impact of development. He believes that although training the supply chain can reduce costs in the short term, it will cause a large number of participants in the long term, which will put pressure on the sustainable development of the e-commerce industry environment. Therefore, he explored a new Supply chain marketing model to meet environmental issues and food demand at the same time.

In summary, with the increasing consumer demand for food safety and the continuous penetration of e-commerce in the e-commerce industry, Chinese foreign scholars have achieved fruitful results in food safety and e-commerce research, comprehensively using qualitative analysis, Quantitative analysis and other different methods have conducted in-depth research on food safety and e-commerce issues from different fields and different perspectives, which provide theories, methods and experience for the smooth development of this research. In terms of theory, in addition to the information asymmetry theory, game theory, and externality theory of the food transaction market, system theory, farmer behavior theory, supply chain management theory, and overall management theory are also used to analyze food safety and e-commerce issues. The diversified analysis perspective provides the theoretical basis and analysis reference for this article. In terms of methods, Chinese foreign scholars comprehensively use diversified methods including analytic hierarchy process, factor analysis method, grey comprehensive evaluation method to comprehensively evaluate food safety level, combine HACCP thinking to build econometric

model, and use system theory method to build food supply chain solutions. The application of these methods provides a reference for this research. In terms of content, firstly, related research on food safety influencing factors and related research on food supply chain management affirmed the importance of the entire food industry's control to the level of food safety, and also explained the importance of the research theme of this article; , E-commerce, e-commerce related research, found that e-commerce in addition to changing the traditional way of food circulation, its characteristics of low transaction costs, high channel transparency, large network effects also provide a way for food safety management, so this article. The research on e-commerce to improve the level of food safety is correct and valuable; finally, food safety technology and other related research provide the basis for this study, HACCP system application research, e-commerce case studies, food supply chain risk management research, The research of food circulation system and other researches provide reference for the research of food safety management mode and implementation path under the e-commerce environment of this article. Therefore, this paper aims at the growing food e-commerce consumer group and the growing food safety demand, using the characteristics of low e-commerce transaction costs, high channel transparency, and large network effects to theoretically explore that e-commerce can help improve food. The mechanism of the safety control level, and the establishment of an e-commerce food safety traceability system to verify the inference that e-commerce affects food safety traceability; combined with the existing economic principles, a comprehensive and systematic analysis of the path of food safety problems was determined. The key traceability points of food safety in the e-commerce environment provide references for the solution of food safety problems.

METHODS

Based on the definition of e-commerce food information traceability and other related concepts and connotations, this chapter introduces the relevant theoretical foundations of this article from the aspects of information asymmetry theory, game theory and externality

theory. Foreign research on food distribution and e-commerce in China and foreign research on e-commerce and food supply chain management in China summarized the research foundation of foreign scholars in China, theoretically analyzed the root causes of food safety problems, and explored e-commerce food safety information the mechanism of traceability.

Based on the cost and benefit theory, when the gain is less than the transaction cost, the trader will incur losses and lose the motivation of the transaction. Therefore, the expectation that the benefit is greater than the cost is the basic starting point of the transaction and the main decision-making basis for the transaction. Facing the preconditions such as the public goods attributes of the food itself, the information asymmetry in the food transaction and the insufficient self-regulation ability of the market mechanism, the stakeholders of food safety in each link will be based on their own cognition, the size of the economic benefits and the management The length of the goal and so on to make personal preferences. When the standard for this decision is lower than the risk traceability standard, food safety risk behaviors will appear, and food safety problems will follow. This section will specifically analyze the food safety stakeholders in different production links, and further explore their behavior choices and decision-making basis.

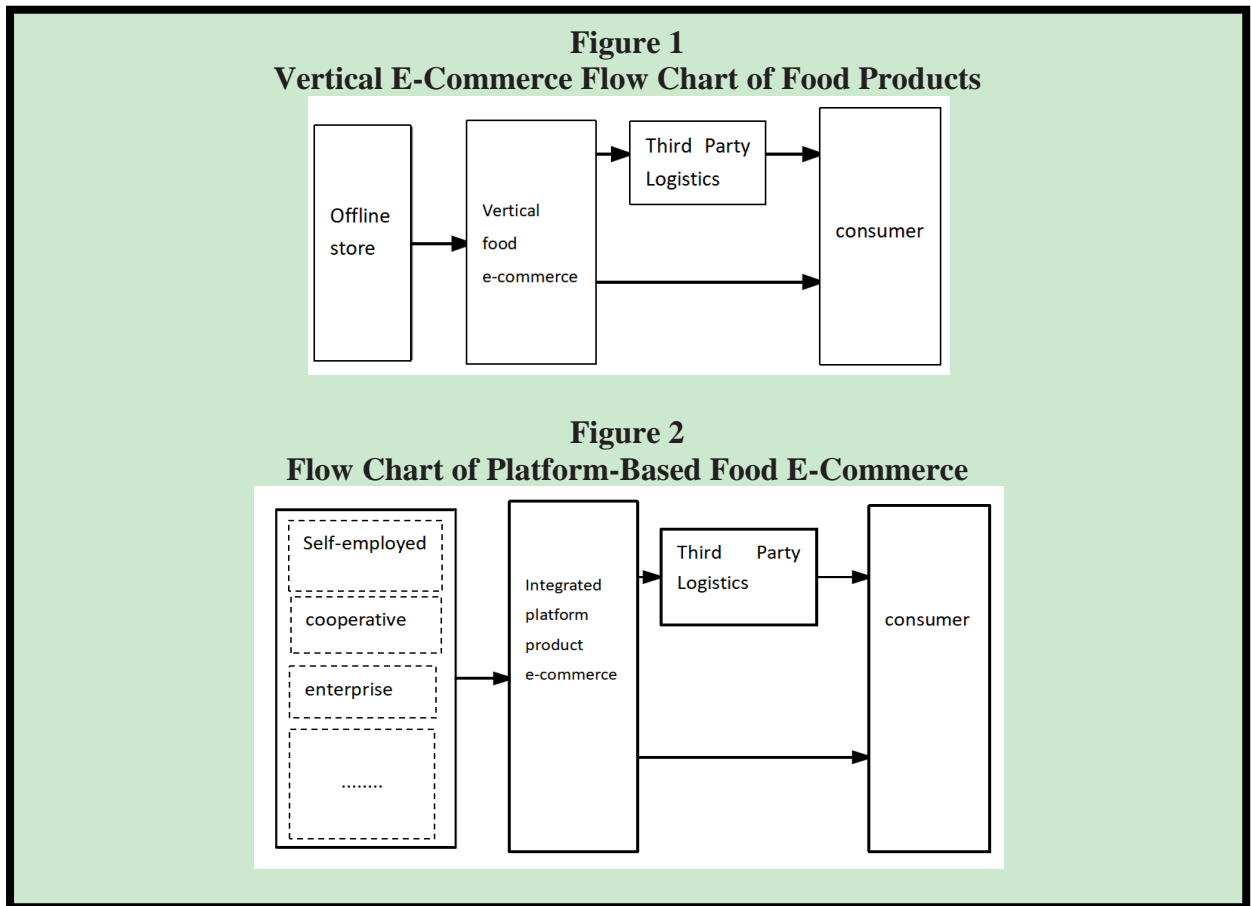
As mentioned above, in the environment of e-commerce circulation, food e-commerce is the link between upstream food producers and processors and downstream consumers. In consideration of its own benefits and reputation, it has the power to lead the traceability of food safety risks. Food e-commerce at the core position between upstream and downstream has the advantages and capabilities of vertical

coordination and traceability, and theoretically, it can have a certain impact on food safety management. Therefore, this section will specifically analyze the mechanism of e-commerce affecting food safety and lay a theoretical foundation for the empirical analysis later.

In view of the fact that food e-commerce is a new business format developed in recent years, the existing official documents and documents do not yet have an exact classification of the types of food e-commerce. The Department of E-commerce and Information Technology of the Ministry of Commerce issued the "China In the E-Commerce Report (2017)", food e-commerce is described as "platform e-commerce, vertical e-commerce and integrated e-commerce". Therefore, this article also uses the methods in the report to classify.

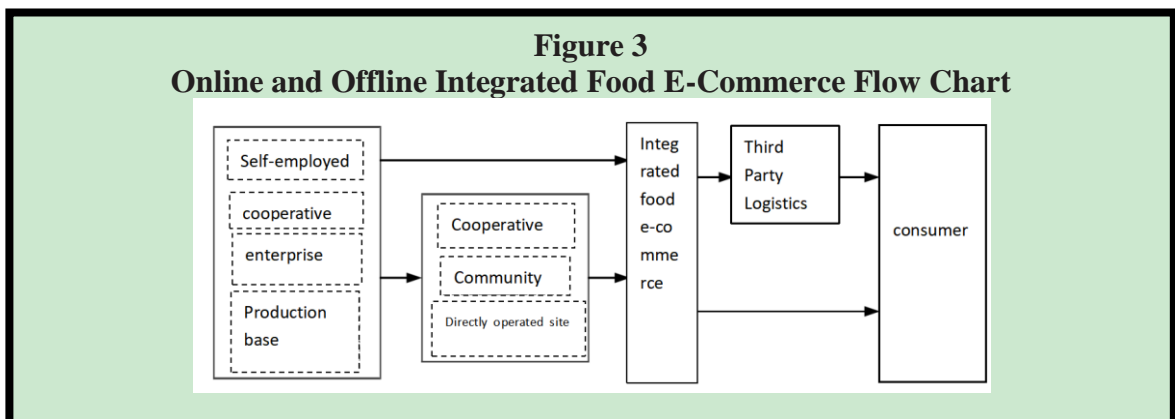
The advantage of this model is that food e-commerce companies can control all links of the supply chain throughout the entire process, obtain price advantages, and ensure food quality and consumer experience. However, under this model, the supply chain is longer, the operating cost is higher, the dependence on the capital chain is severe, and the cost of acquiring customers is high. The process of vertical food e-commerce is shown in Figure 1.

The advantage of this model is that the fresh channel can rely on the large amount of traffic accumulated by the platform, and lower the customer acquisition cost. However, this model cannot monitor the entire process of food in the supply chain, nor can it guarantee its quality and consumer experience. How to convert the traffic of the comprehensive e-commerce platform into its own purchasing power and maintain continuous operation is the future development of it First class problem. The process of platform food e-commerce is shown in Figure 2.



The advantage of this model is that by going deep into communities and convenience stores, narrowing the coverage area, it can meet consumers' immediate needs for food and reduce food loss. However, due to the small storage volume and limited environment of convenience stores and communities, it is very easy to cause

food loss, and the effective configuration and reasonable control of the entire model supply chain are required to be high. The process of online and offline integrated food e-commerce is shown in Figure 3.



Traceability Formation System With E-Commerce Food Safety

As mentioned above, the circulation entities between the upstream and downstream of the food supply chain have the motivation to lead food safety risk management, and e-commerce as a new circulation format can effectively guide the improvement of food safety traceability. This chapter will be based on the construction of the food safety management key traceability point system, using the analytic hierarchy process and entropy method to evaluate the importance of the key traceability points, and provide a positioning basis for food safety management in the e-commerce environment.

Food safety risks are multi-linked. Improper operations and improper supervision such as the environmental management of the place of production of food, the use of inputs, the use of additives such as preservatives, the traceability of temperature and humidity during storage and transportation, and improper supervision may all cause food safety problems. . In the e-commerce environment, based on the advantages of the Internet and Internet of Things in information acquisition and delivery, consumers can directly exchange information, logistics, and capital flows with food producers and processors, shortening the circulation links. It is worth noting that although the circulation links have decreased, the length of the entire supply chain of food from "field to table" has not decreased, and consumers' demand for food safety, quality and freshness has not decreased. China's current regulatory system has problems such as unclear regulatory responsibilities, incomplete information sharing and system coordination mechanisms, and it is difficult to supervise and enforce online food safety. Faced with the constantly exposed online food safety incidents, the ever-increasing food e-commerce sales market and the ever-increasing consumer demand for safety and quality, we can only actively seek to transform the food safety control model and focus on testing final products from the past. The effective way to solve food safety problems is to use the characteristics of e-commerce "transparent supply chain" to carry out targeted management and prevention of pre-, during, and post-natal safety.

This article draws on the Hazard Analysis and Critical Traceability Point (HACCP) thought and the research methods of Song Yongping (2018), Huang Jing (2012) and other scholars. First, it conducts a comprehensive analysis of food safety factors based on different links, and initially determines the food safety traceability element system; Gradually screen out the key points of food safety, and consult relevant industry experts to optimize the system structure; based on the survey questionnaire, the analytic hierarchy process and entropy method are used to evaluate the key traceability points of food safety, and the results are analyzed, and then the e-commerce environment Provide basis for food safety management and risk prevention.

The analytic hierarchy process was first proposed by the American operations researcher and professor at the University of Pittsburgh Satie. In the 1970s, the US Department of Defense was working on the topic of "power distribution based on the contribution of various industrial sectors to the national welfare". At that time, Satie designed this method specifically for this topic. The analytic hierarchy process is a decision-making analysis method with hierarchical weights, which combines quantitative analysis and qualitative analysis, so that many decision-making problems have been solved. After the analytic hierarchy process was produced, it has been widely promoted at home and abroad, and has been applied to many fields such as production decision-making, economic analysis, energy distribution, and enterprise management. When the analytic hierarchy process is used in the internal retrospective evaluation of commercial banks, it mainly solves the problem of the distribution of the weight of each indicator.

The core of the analytic hierarchy process is to use the judgment matrix to determine the importance of each factor. The basic principle of the analytic hierarchy process is as follows: There are n objects whose weights are $w_1, w_2, w_3, \dots, w_n$, and the weight ratio of the i -th object to the j -th object is recorded as $a_{ij} = w_i/w_j$, then it can be formed An $n \times n$ order matrix is called a pairwise comparison matrix:

$$X = \begin{pmatrix} X_{11} & \cdots & X_{1n} \\ \vdots & \ddots & \vdots \\ X_{n1} & \cdots & X_{nn} \end{pmatrix} \quad (1)$$

$$X_1 = \begin{pmatrix} X_{11}^1 & \cdots & X_{1m}^1 \\ \vdots & \ddots & \vdots \\ X_{m1}^1 & \cdots & X_{mm}^1 \end{pmatrix} \quad (2)$$

For the binary judgment matrix X and X1, the

$$W_x = [w_{x1}, w_{x2}, \dots, w_{xn}]^T = \left[\frac{w_{x1}}{\sum w_i}, \frac{w_{x2}}{\sum w_i}, \dots, \frac{w_{xn}}{\sum w_i} \right]^T \quad (3)$$

$$W_{x1} = [w_{x11}, w_{x12}, \dots, w_{x1n}]^T = \left[\frac{w_{x11}}{\sum w_i}, \frac{w_{x12}}{\sum w_i}, \dots, \frac{w_{x1n}}{\sum w_i} \right]^T \quad (4)$$

In the same way, for calculating the degree of influence of n influencing factors of a thing, the principle of judgment matrix can also be used. First rely on experience to judge the ratio of importance between the two factors, and then construct a judgment matrix of n×n order, use linear algebra to find the eigenvector method to find the single largest positive eigenvector of the matrix, and then obtain these n the intuitive value of the importance of the influencing factor. This is the basic principle of analytic hierarchy process. It is worth noting that after calculating the importance of the influencing factors, the consistency test of the judgment matrix should be carried out. When all elements in the judgment matrix satisfy $a_{ij}=a_{ik} \times a_{kj}$, it is said that

maximum eigenvalues λ_{Max} and λ_{1Max} , and the corresponding eigenvectors W_x and W_{x1} are respectively obtained. The eigenvalues are normalized to obtain the weight coefficient vector. Y and Y1; the same can be obtained. The calculation formula is as follows:

the judgment matrix satisfies complete consistency. The aforementioned judgment matrix of object weight obviously satisfies complete consistency. However, because the pairwise comparison value of the influencing factors is that people use experience to quantify the fuzzy feeling into an exact value, it is difficult to achieve complete consistency among multiple factors. It may appear that the importance of A is 3 times that of B, and B's The importance is 2 times that of C, but A is only 4 times more important than C. This situation of inconsistent quantitative relationships may even lead to more exaggerated contradictions. Therefore, it is necessary to check the consistency of the judgment matrix to ensure the accuracy of the results.

Table 1
Evaluation Criteria For Elements In The Judgment Matrix

The scale of judgment	Defined.
1	Bi and Bj were just as important
3	Bi was slightly more important than Bj
5	Bi was significantly more important than Bj
7	Bi was more important than Bj
9	Bi was more important than Bj
2、4、6、8	was in the middle of the two adjacent comparison scales above

Empirical Study

Taking the Hangzhou fresh food market as the object, through analyzing the overall development advantages of the Yangtze River Delta region, combined with the analytic hierarchy process, the development of the regional fresh food e-commerce logistics development existing big data resource sharing system and the fresh food information traceability system are not fully developed. Wait for "shortcomings", and actively explore fresh food e-commerce information to trace the future development direction. In the development of China's fresh food logistics, due to the high cost, limited distribution range, and large losses in fresh food logistics, Hangzhou fresh food logistics does not have a competitive advantage in logistics facilities and logistics technology, and the Yangtze River Delta is integrated. In addition to expanding the radiation range of roads, railways, and aviation, and enhancing the influence of food bidding in the Hangzhou urban circle, more attention should be paid to the construction and investment of fresh cold chain transportation infrastructure equipment in the e-commerce environment. This is also an important factor for e-commerce food to play its value attributes. Companies engaged in fresh food can generally obtain consumer data information, understand consumption trends, and better analyze the market through the disclosure of reports on social networks and many e-commerce platforms to make timely adjustments; but at present, many data resource sharing mechanisms are insufficient. Perfect, it is difficult to obtain other data outside the e-commerce platform, and it is easy to give birth to the gray trading behavior of information trading. On the one hand, it violates the privacy of consumers; on the other hand, it also lays hidden dangers for legal disputes such as information insecurity and illegal use.

Establishment of a Key Traceability Point System for E-Commerce Food Safety Information Traceability

Food safety is a complex concept that is difficult to directly define. The natural attributes of food determine the complexity, accumulation,

concealment, multi-step nature and directness of hazards. Although it can be measured by specific attributes such as safety attributes, nutritional attributes, value attributes, packaging attributes, and process attributes (Caswell, 1998), these attributes are often judged by consumers after the fact (Zheng Shaofeng, 2016). Cannot determine and locate the root cause of the problem. Therefore, this article draws on Wan Junyi and Luo Biliang's (2011) production chain food safety screening method and AnmteI (2000), Zhong Zhen (2012), Chang Qian (2016) and other scholars' food safety attributes and quality attributes. The system structure of key traceability points for food safety in the chain.

From the perspective of the supply chain, food safety issues can be divided into two types. One is that under the existing equipment and technical conditions, even if the producers and operators have fully fulfilled the law and morality, they cannot be avoided. It is caused by the inadequacy of testing equipment and the backward testing technology; the other is the problem caused by the violation of integrity and morality in the food industry chain due to the economic interests of the producers and operators, such as e-commerce. Caused by improper use of industry inputs, due to unprofessional transportation and storage, due to environmental pollution in the place of production, etc. (Zhou Yingheng, 2003; Wan Junfeng, Luo Biliang, 2011). The first type of safety problem is determined by some objective reasons and is difficult to trace in the actual production process, while the second type of safety problem is mainly man-made risks caused by the dishonest pursuit of economic benefits by producers and operators, and should be resolutely stopped. Food "from field to table" needs to go through the entire process of production environment, production link, processing link, circulation link, distribution link, and sales link. Food safety officially traces the key elements and key points of different links in these processes. Moreover, according to the idea of dichotomy between safety attributes and quality attributes in food safety, the production environment, production links and processing links will directly affect the food safety attributes, and the circulation links, distribution links, and sales links will directly affect the food quality attributes.

In summary, the food safety critical traceability point system in this article is composed of three elements: target level, criterion level and parameter level. The target layer is mainly investigated from the dimensions of e-commerce food safety attributes, responsibility attributes and value attributes. The criterion layer mainly considers the key links of the production environment, production links, processing links, management system establishment, transportation links, distribution links, impact on the surrounding environment, and user experience that determine food safety in the entire industrial chain of food production and operation. The parameter layer mainly contains specific elements that affect the criterion layer, a total of 24 items, as shown in Table 2.

The production environment mainly includes the water, soil, and air needed for food growth, as well as the ecological environment far away from industrial areas, mining areas and prosperous cities, which are the source of food safety traceability. In the past two decades, all industries in China have been in a stage of rapid social and economic development. The emissions of the "three wastes" generated in industrial production have caused great harm to the surrounding farmland environment and seriously affected the surrounding food production. Origin environment. Take soil pollution as an example. In some industrial parks, oil production areas, mining areas, and both sides of arterial roads, soil pollution is serious. Pollutants will spread out through natural media such as rivers and soil, increasing the cadmium, arsenic, and arsenic in the surrounding farmland soil. The content of heavy metals such as lead, mercury, chromium, copper, etc. directly lead to the excessive heavy metal content of food grown on contaminated land and the unqualified index of toxic ingredients.

Therefore, the environmental criteria layer of the production area in this article mainly includes three parameter layer elements, including

ecological environment monitoring, air pollutant monitoring and water quality monitoring. The soil environment monitoring elements reflect the monitoring and traceability capabilities of heavy metals and other pollutants in the soil environment for food cultivation; the ecological environment monitoring elements reflect the monitoring and traceability capabilities of the farmland ecological environment; the atmospheric pollutant monitoring elements reflect the monitoring of air pollution. And traceability; farmland irrigation water quality elements reflect the monitoring and traceability of farmland irrigation water pollution.

The production process refers to the entire process of food from the field to leaving the place of production, including pre-production planting, deep ploughing, in-production fertilization, irrigation, mechanical farming, plant protection, and pest control. China's e-commerce industry is a labor-intensive industry. The traditional food production method is highly dependent on various production factors and the land productivity is low. The production technology and testing technology in most areas are relatively backward, and the e-commerce industry is one-sided pursuit. Increasing production, but the requirements for food safety and quality are not high, therefore, there are more hidden food safety hazards. In addition, under the current economic system of household contract responsibility system in China, small-scale production entities always seek to maximize the economic benefits of food sales under the conditions of the existing scale, so they often take special measures to solve the problem in the pursuit of electricity. Various problems encountered in the process of maximizing the business industry, such as increasing the application of chemical fertilizers, pesticides and other e-commerce industries to produce chemical inputs or adopting plastic films and other "e-commerce industry chemistry" methods to increase crop yields. This leads to food safety problems.

Table 2
The Key Traceability Point System for E-Commerce Food Safety Information Traceability

Target layer A	Guideline Layer B	Feature layer C	
E-commerce responsibility for food safety Attribute (X)	Environment of origin (X1).	X11	Soil environmental monitoring
		X12	Ecological environment monitoring
		X13	Air quality monitoring
		X14	Monitoring of irrigation water quality in farmland
	Production (X2).	X21	Fertilizer use measures
		X22	Pesticide application measures
		X23	Irrigation technology
		X24	Pest control measures
	Initial processing session (X3).	X31	Raw material acceptance measures
		X32	Primary packaging measures
	Detection and recording link (X4).	X41	E-commerce food testing measures
		X42	Secure traceability records
		X43	Standardized rules and regulations are established
E-commerce food safety risk attribute (Y)	Risks in transport (Y1)	Y11	Packaging management measures
		Y12	Transport ambient temperature and humidity traceability measures
		Y13	Measures for the use of chemical preservation agents
	Risk of distribution ring day (Y2).	Y21	Location tracking measures
		Y22	Transportation.
E-commerce food safety value attribute (Z)	User Value Properties (Z1)	Z11	E-commerce food brand building
		Z12	User experience
		Z13	E-commerce food brand marketing
		Z14	E-commerce food trademark registration measures
	Social Value Attributes (Z2)	Z21	Impact on the surrounding environment
		Z22	The degree of sustainability

The guideline level of the production process in this article mainly includes four parameter level elements, including fertilizer use measures,

pesticide application measures, irrigation techniques and pest control measures. The elements of chemical fertilizer use measures reflect

the selection of fertilizer types and the traceability of the amount in the production process; the elements of pesticide application measures reflect the traceability of the selection and dosage of different types, toxicity, and residual pesticides in the production process; reflection of the irrigation technology elements In the production process, the ability to trace the amount of water supply and the selection of pipe materials such as micro-irrigation pipes; the elements of pest control measures reflect the ability to prevent and control pathogenic microorganisms and pests that harm the farmland environment and crop production.

Food processing is divided into primary processing and deep processing. Primary processing refers to simple operations such as cleaning, cutting, baking, and packaging of food, while deep processing refers to the dehydration, dehydration, and dewatering of food in order to maximize production and economic benefits. Processing methods such as extraction. In view of the fact that in the e-commerce environment, the food traded is mostly fresh food, therefore, the processing link in this article only refers to the initial processing link. The primary processing link is generally completed in the food production area, and the production area environment usually does not have the equipment, environment, and sanitary conditions required for the primary food processing, nor does it have the basic inspection capabilities for food raw materials, so there are potential safety hazards.

The criterion level of the primary processing link in this article mainly includes two parameter level elements, including raw material acceptance measures and primary packaging measures. The traceability elements of the raw material acceptance measures reflect the traceability of whether the food is rotten, mildew, and contamination by toxic and hazardous substances; the elementary packaging measures reflect the simple cleaning, sorting, packaging, drying, cutting, etc. of the food. Traceability of packaging materials clean and hygienic conditions.

The testing and recording link refers to the detection of pesticide residues, heavy metals,

microorganisms, etc. on the food that has undergone the initial processing of the production process, as well as the original record of the food production and processing process, providing documents for future food safety traceability, and providing verification, Evidence of preventive measures and corrective actions. Especially in the e-commerce environment, the development of e-commerce has innovated the way of food circulation, but also forced the standardization of the e-commerce industry's production and reshaped the e-commerce industry's industrial form. Therefore, it is particularly important to formulate a food inspection and inspection system and a production record system, and to standardize the composition of food production and processing.

The criterion level of the testing and recording link in this article mainly includes three parameter level elements, including food testing measures, safety traceability records and the establishment of standardized rules and regulations. The traceability elements of food inspection measures reflect the use of professional inspection and

The ability to detect and trace pesticide residues, heavy metal content, microorganisms, etc.; safety traceability record elements reflect measures such as recording, filing and storage of food production processes; standardized rules and regulations establish traceability elements to ensure that food production is effective Management, the institutional arrangements for the procurement of agricultural materials, production technology and production base arrangements, as well as the retrospective measures adopted to uniformly regulate labels and standards.

The transportation link refers to the logistics process of transporting food from the place of production to the place of consumption. In traditional food circulation, it is necessary to pass through various intermediate links such as wholesale markets at all levels, food circulation companies, large chain supermarkets, retail stores, and community direct sales outlets to reach consumers. The transportation links are many and long, and the circulation channels are complicated. Food safety traceability is difficult. Once the various links in transportation are not

effectively connected, food safety accidents are extremely easy to occur. In the food e-commerce environment, intermediate links such as wholesalers at all levels are simplified, circulation channels are shortened, circulation efficiency is improved, food can be directly shipped from the place of production to the place of consumption, food safety risks are greatly reduced, and food in the transportation environment. The safety traceability element is also greatly simplified.

The transport link criterion layer in this article mainly includes three parameter layer elements, including packaging management measures, transportation environment temperature and humidity traceability measures, and chemical preservative use measures. The traceability elements of packaging management measures reflect the material packaging and packaging technical measures carried out in order to maintain the value and original state of the food during transportation and storage; the traceability elements of the temperature and humidity of the transportation environment reflect the traceability of the temperature and humidity of the vehicle transporting food. The ability to use chemical preservatives and traceability elements reflect management measures such as the use of chemical preservatives during storage and transportation.

The distribution link refers to the process of dividing and packaging food at the place of consumption according to the requirements of users, and sending the food from the place of consumption to consumers in a timely manner. It is the end link of food circulation. With the increase in income levels and the development of e-commerce, consumers have increased their demand for food from the increase in quantity to the demand for quality, and they pay more attention to the freshness and safety of food. The high standards of the distribution link have led to the limitations of distribution. Even if measures such as preservation are taken, the fresh and perishable food will still cause a certain percentage of losses, and this percentage will increase rapidly with time and distance. . Therefore, the distribution link has higher requirements for the "last mile" transportation process and distribution methods. In the "last mile", try to speed up the circulation efficiency,

reduce the loss on the way, and choose third-party logistics to establish a stable contract relationship to ensure specialization. The delivery service is of vital importance to reduce the risk of safety accidents.

The criterion level of the distribution link in this article mainly includes two parameter level elements, including location tracking measures and distribution method measures. The elements of positioning and tracking measures mainly reflect the ability to monitor delivery vehicles, delivery personnel, and delivery time during the "last mile" process; the elements of tracking measures for delivery methods reflect the level of service, professional technology, information collection, and risk prevention in the delivery link. Traceability of other aspects.

The transaction link refers to the process in which food is transferred to consumers after passing through many links in the entire industry chain to realize its use value and economic value. The safety traceability elements of the traditional food transaction link include weighing, settlement, etc., but with the development of information technology, weighing and settlement have all been replaced by specialized machines, and the weighing is more accurate and the settlement is more accurate. Therefore, In the transaction link, more attention is paid to food brands and trademarks. With the increasingly fierce competition in markets outside of China, creating brands and cultivating famous brands have become one of the main means to enhance the image of the food market and increase the competitiveness of the food market. In the e-commerce environment, food brands are the embodiment of comprehensive strength in food safety, quality, trademark, credit, and profitability. Food brands are the ultimate embodiment of standardization of the production process. Therefore, food safety and quality traceability in the transaction link reflects In terms of food brand and trademark construction.

The user value attribute criterion layer in this article mainly includes four parameter layer elements, including food brand building, food brand adherence, food brand marketing methods and food trademark registration measures. Food brand building elements can reflect the

differentiated characteristics of food quality; food brand adhesion elements reflect consumers' trust, loyalty and acceptance of the brand; food brand marketing elements reflect the status of food transactions and promotion; food trademarks The elements of the registration measures reflect the authenticity and reliability of the food brand and quality.

The role of e-commerce in China's social development is also obvious. More than 50% of the public believe that e-commerce has a greater impact on other aspects of society, such as employment, national taxation, logistics, postal services, network finance, government functions, national policies, national economy, legal systems, living environment, popular culture, and charity. The social value attribute criterion layer in this article mainly includes two parameter layer elements, including the impact on the surrounding environment and the degree of sustainable development.

Credit Validity Analysis

In order to further test the objectivity, accuracy and fairness of the food safety key traceability system, this paper conducts a reliability and validity test on the evaluation index system to measure the scientificity of the evaluation index system and ensure the establishment of the evaluation index system.

This paper uses Cronbacha coefficient as the

criterion to test the internal consistency of the evaluation indicators. This article invites industry experts from research institutions such as the Beijing Academy of Agriculture and Forestry Sciences E-commerce Industry Standards and Testing Technology Research Center, Vegetable Research Center, Information Technology Research Center, Plant Protection and Environmental Protection Research Institute, Plant Nutrition and Resources Research Institute, etc. As an expert, the manager of the food e-commerce company interviewed the expert and invited the expert to score and evaluate the food safety critical traceability system, with a full score of 10. The evaluation result is calculated by SPSS software. The results are shown in Table3. The overall reliability coefficient α of the evaluation index of the construction plan is 0.90, which meets the requirements of surveying, so the evaluation index system is credible and reliable. The Cronbacha coefficient calculation formula is as follows, where k represents the number of evaluation indicators in the evaluation system, S^2_i represents the variance of the i-th evaluation indicator, and s^2 represents the variance of the total evaluation score.

$$\alpha = \frac{k}{k - 1} \left(1 - \frac{\sum_{i=1}^k S^2_i}{s^2} \right) \tag{5}$$

Table3 Reliability Inspection of Food Safety Key Traceability Point System Under E-Commerce Environment		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.9	0.899	142

This article adopts the content validity ratio CVR to monitor the validity. The calculation formula of CVR is as follows, where N. Indicates the number of experts who think that the evaluation index reflects the characteristics of the evaluation object. N represents the total number of experts participating in the evaluation. The

calculated CVR is 0.636, which shows that the design of the food safety key traceability point system in the e-commerce environment is effective and accurate.

$$CVR = \frac{2N_e}{N} - 1 \tag{6}$$

Selection of Key Traceability Points for E-Commerce Food Safety

By citing the scale criteria of 1-9, each traceability element of the e-commerce food safety key traceability point system based on different links is evaluated separately: the target level is against the criterion level judgment matrix X and Y, and the criterion level is against the element level judgment matrix X, Y, calculate the weight in normalization.

Suppose the consistency index of the judgment matrix is CR. When $CR=CI/RI<0.1$, it can generally be considered that the judgment matrix has satisfactory consistency. The calculation formula of CI and the value of RI are as follows:

$$CI = \frac{\lambda_{max} - n}{n - 1} \quad (7)$$

Use MATLAB software to calculate the largest characteristic root of the judgment matrix $\lambda_{max} = 3.0348$. In order to check the consistency of the judgment matrix, the consistency index needs to be calculated:

$$CI = \frac{\lambda_{max} - n}{n - 1} = \frac{3.0348 - 3}{3 - 1} = 0.0174$$

Average random consistency index RI=0.52. Random consensus ratio:

$$CR = \frac{CI}{RI} = \frac{0.0174}{0.52} = 0.0334 < 0.10$$

Therefore, it is believed that the results of the analytic hierarchy process have satisfactory consistency, that is, the distribution of weight coefficients is very reasonable. Use matlab software to calculate the weight of the index.

1	2	3	4	5	6	7	8	9
0.00	0.00	0.52	0.89	1.12	1.26	1.36	1.41	1.46

Calculate the weight of each index Xin in the index layer of the evaluation system to the target layer P. The formula is calculated as follows:

$$V_x = W_{xi} \times W_{xin} \quad (8)$$

$$V = [V_1, V_2, \dots, V_{n+m}] \quad (9)$$

VY is the same, so the calculation formula is omitted.

This article invited people from China E-commerce Industry University, Beijing E-

commerce Industry Standards and Testing Technology Research Center, National Academy of Food Sciences, Jilin Province E-commerce Industry Academy of E-commerce Industry Standards and Testing Technology Institute, Food Inspection Journal, Zhejiang Province Food Industry experts, scientific research workers, government

	X	Z	Weight	Bits
E-commerce food liability attribute(X).	1.0000	3.0310	0.5881	1 lmax=3.0348
Risk attributes(Y) for e-commerce food safety	0.3541	1.8771	0.2509	2 CI=0.0174
E-commerce food safety value attribute(Z).	0.3299	1.0000	0.1610	3 RI=0.52 CR=0.0334

Table6 Key Link Weights Of E-Commerce Food Safety Responsibility Attributes						
	X1	X2	X3	X4	Weig ht.	Bits
The environment of origin(X1).	1.00 00	0.67 83	3.58 17	3.42 07	0.350 8	lmax=4.01 78
Production (X2).	1.47 42	1.00 00	3.48 13	3.64 50	0.430 1	CI=0.0059
Initial processing session (X3).	0.27 92	0.28 72	1.00 00	0.96 43	0.108 7	RI=0.9
Detection and recording link(X4).	0.29 23	0.27 43	1.03 70	1.00 00	0.110 4	CR=0.006 7

Table7 Key Link Weights of E-Commerce Food Safety Risk Attributes				
attributes	Y1	Y2	Weight.	Bits
Transport link(Y1).	1.0000	2.7592	0.7340	1
Distribution (Y2).	0.3624	1.0000	0.2660	2

supervisors, e-commerce enterprise logistics management personnel, production company representatives and front-line operators from the Security Center, Jingdong Mall, Beijing Green Fulong E-commerce Industry Co., Ltd. and

other units filled out the survey questionnaires, The key traceability point system is compared in pairs, and the results are substituted into the analytic hierarchy process to calculate the available weights, as shown below.

Table8 Key Link Weights of E-Commerce Food and Food Safety Value Attributes				
attributes	Z1	Z2	Weight.	Bits
User value(Z1).	1.0000	0.3981	0.2848	2
Social value(Z2).	2.5117	1.0000	0.7152	1

According to the same method, the weights of all levels under different criterion levels can be obtained in turn, the method is the same, and this article is omitted here. After calculation, the

final weights of the food safety supervision level evaluation index system based on the analytic hierarchy process are shown in Table9.

Table9
Weights of Key Traceability Points in AHP

Key trace points	Weight.	Key trace points	Weight.
X11	0.1300	X43	0.1300
X12	0.0335	Y11	0.0660
X13	0.0428	Y12	0.0296
X14	0.0717	Y13	0.0885
X21	0.0756	Y21	0.0481
X22	0.0738	Y22	0.0186
X23	0.0318	Z11	0.0087
X24	0.0217	Z12	0.0054
X31	0.0422	Z13	0.0170
X32	0.0127	Z14	0.0148
X41	0.0339	Z21	0.0820
X42	0.0183	Z22	0.0332

Selection of Key Traceability Points Based on Entropy Method

In order to weaken the subjective arbitrariness of the analytic hierarchy process, this paper uses the entropy method to modify the weight. The specific process is as follows: Assuming that the original data matrix is $R=(X_{ij})_{m \times n}$, standardize the original data matrix, and calculate the proportion q_{ij} of the i -th evaluation object index under the standardized j -th index. The calculation formula is as follows:

$$q_{ij} = \frac{x_{ij}}{\sum_{i,j=1}^m x_{ij}} \tag{10}$$

According to the calculated characteristic specific gravity value, calculate the entropy value e of the j th index; Among them, $k>0$, \ln is the natural logarithm, $0 \leq e_j \leq 1$, the formula is as follows:

$$e_j = -k \sum_{i=1}^m q_{ij} \ln q_{ij} \tag{11}$$

$$k = \frac{1}{\ln m}, \text{ , } k > 0, 0 \leq e \leq 1 \tag{12}$$

Calculating the difference coefficient of the j -th index, the formula is: $d_j = 1 - e_j$, because entropy

is a measure of disorder in the system, the larger the index, the less information it contains. Therefore, when the d_j is larger, the index is more important and its weight is higher. Finally, the difference coefficient vector $D=(d_1, d_2, \dots, d_n)$ can be obtained.

This article uses the difference coefficient of each index to represent the weight value, and the difference coefficient needs to be normalized. The calculation formula is:

$$W_j = \frac{d_j}{\sum_{j=1}^n d_j}, (j = 1, 2, \dots, n) \tag{13}$$

According to $q_{ij} = \frac{x_{ij}}{\sum_{i=1}^m x_{ij}}$, find the characteristic proportion, and bring in the formula

$e_j = -k \sum_{i=1}^m q_{ij} \ln q_{ij}$ to find the entropy value and difference coefficient of each factor, and finally find the weight as shown in Table10:

Table10
Entropy Method Key Traceability Point Weight

Key trace points	Weight.	Key trace points	Weight.	Key trace points	Weight.
X11	0.0670	X31	0.0395	Y21	0.0260
X12	0.0348	X32	0.0329	Y22	0.0313
X13	0.0498	X41	0.0510	Z11	0.0438
X14	0.0568	X42	0.0553	Z12	0.0276
X21	0.0463	X43	0.0446	Z13	0.0302
X22	0.0669	Y11	0.0337	Z14	0.0369
X23	0.0210	Y12	0.0391	Z21	0.0508
X24	0.0447	Y13	0.0380	Z22	0.0280

Determination of Key Traceability Points

Based on the analysis of the food safety traceability elements in different links of the entire industry chain, the analytic hierarchy process and entropy method are used to determine the weights, and finally the key traceability points for food safety are obtained. Among them, the production environment, production links, monitoring and recording links are considered to be the key links for food safety traceability. Based on relevant literature, the food safety key traceability points are sorted according to their weights, and the top 2/3 traceability points are selected as the food safety key traceability points. The results are shown in Table11.

RESULTS

Key Traceability Points Affecting Food Safety Attributes

As shown in the results, the key links affecting the responsibility attributes of e-commerce food safety include the production environment,

production links, and testing and recording links. The most important key traceability points affecting the responsibility attributes of e-commerce food safety include soil environmental monitoring and farmland irrigation. The weights of water quality monitoring, pesticide application measures, food testing measures and safety traceability records are 0.1300, 0.0717, 0.0738, 0.0339 and 0.0183, respectively.

According to the National Survey Bulletin of Soil Pollution, moderately and heavily polluted soils accounted for about 2.6% of the country’s arable land, moderately and heavily polluted 2.9% of arable land, and slightly polluted 11%. The rate of pollution is increasing. Although with the joint efforts of the e-commerce industry department and local governments at all levels, many sewage irrigation has been stopped, but the heavy metal residues in the soil have a weak migration ability and strong adsorption to the soil, which is difficult to remove. The "cadmium rice" produced was caused by the excessive content of heavy metals in the soil of Hunan where it was produced. Therefore, the safety traceability of soil

environmental monitoring and farmland irrigation water quality monitoring should be strengthened. Second, the effective utilization rate of pesticides in China is less than 30%. The application of pesticides has a direct impact on the environment, agricultural land grains and food residues, and is also one of the hidden dangers of food safety. Therefore, pesticide application is also the key to food safety traceability in the e-commerce environment Trace back point. Third, food testing measures

and safety traceability records involve the standardization and traceability of production in the e-commerce industry, and are also key traceability points that directly affect food safety attributes. In addition, the air monitoring in the production area, the fertilizer use measures in the production process, the prevention and control of diseases and insect pests, the establishment of standardized rules and regulations in the detection and recording process also have a greater impact on the safety attributes of food.

Table11
Key Traceability Points for Food Safety

Target layer A	Guideline Layer B	Feature layer C		Weight.
E-Commerce Food Safety Responsibility Attribute (X).	Environment of origin (X1).	X1 ₁	Soil environmental monitoring	0.1300
		X1 ₂	Ecological environment monitoring	0.0335
		X1 ₃	Air quality monitoring	0.0428
		X1 ₄	Monitoring of irrigation water quality in farmland	0.0717
	Production (X2).	X2 ₁	Fertilizer use measures	0.0756
		X2 ₂	Pesticide application measures	0.0738
		X2 ₃	Irrigation technology	0.0318
		X2 ₄	Pest control measures	0.0217
	Initial processing session (X3).	X3 ₁	Raw material acceptance measures	0.0422
		X3 ₂	Primary packaging measures	0.0127
	Detection and recording link (X4).	X4 ₁	E-commerce food testing measures	0.0339
		X4 ₂	Secure traceability records	0.0183
		X4 ₃	Standardized rules and regulations are established	0.0660

E-Commerce Food Safety Risk Attribute (Y).	Risks in transport (Y1).	Y1 1	Packaging management measures	0.0296	
		Y1 2	Transport ambient temperature and humidity traceability measures	0.0885	
		Y1 3	Measures for the use of chemical preservation agents	0.0481	
	Risk in the distribution chain (Y2).	Y2 1	Location tracking measures	0.0186	
		Y2 2	Delivery method	0.0087	
	E-Commerce Food Safety Value Attribute (Z).	User Value Attribute (Z1).	Z1 1	E-commerce food brand building	0.0054
			Z1 2	User experience	0.0170
Z1 3			E-commerce food brand marketing methods	0.0148	
Z1 4			E-commerce food trademark registration measures	0.0820	
Social Value Attribute (Z2).		Z2 1	Impact on the surrounding environment	0.0332	
		Z2 2	The degree of sustainability	0.1300	

Key Traceability Points of Risk Attributes Affecting E-Commerce Food Safety

As shown in the results, the key aspects of the risk attributes that affect e-commerce food safety include transportation and distribution. The most important key traceability point that affects the risk attributes of e-commerce food safety is the positioning and tracking measures, with a weight of 0.0186. The transportation environment Traceability points such as temperature and humidity traceability and the use of chemical preservatives also have a greater impact on food quality attributes, and their weights are 0.0885 and 0.0481 respectively.

Based on the empirical product attributes of food, in the e-commerce environment, food brands are an important source for consumers to obtain information about food quality attributes, a guarantee for high-quality food at a better price, and a guarantee for food transaction volume, but due to the lack of strict supervision

System, coupled with the asymmetry of brand information in the food market, some production and operation entities in the e-commerce industry are opportunistic, starting from individual interests, sacrificing food for economic benefits such as output and sales, and branding a large number of inferior foods when selling Food trademarks are used to obtain excess profits. This kind of speculation has seriously damaged the brand and reputation of food and affected food safety. Therefore, positioning and tracking measures have a greater impact on the risk attributes of food safety and are also one of the key traceability points. One. In addition, the freshness of food is also a key factor affecting food quality. In the actual circulation process, the main body of production and circulation often use chemical preservatives to keep food fresh, so the use of preservatives is also the key to inspecting food quality. Trace back point.

Key Traceability Points That Affect the Value Attributes of E-Commerce Food Safety

As shown in the results, the key links that affect the value attributes of e-commerce food safety include user value attributes and social value attributes. The most important key traceability point that affects the value attributes of e-commerce food safety is the degree of sustainable development, with a weight of 0.1300, E-commerce food trademark registration measures, impact on the surrounding environment, user experience and other traceability points also have a greater impact on the value attribute of e-commerce food safety, and their weights are 0.0820, 0.0332 and 0.0170 respectively.

Non-polluted food, green food, organic food, never food, and food geographical indication products are called "four products and one label" products, which are strictly implemented in accordance with internationally recognized food safety standards to make food safety more transparent. Better development under the supervision of consumers. Really make green products visible to customers, traceable to the source, and affordable. E-commerce companies need to strive to be the industry's green food leader, food safety executive, and courageously take the responsibility of the industry while ensuring safety and efficiency. Utilize the large platform of e-commerce network to provide customers with fresh food in time, from order to receipt, timeliness can be guaranteed.

User experience is a purely subjective feeling established by users in the process of using the product. In the environment of e-commerce, online transactions are frequent. In the process of online sales, users often cannot touch the physical objects like buying goods offline, and online services may not be able to provide timely and accurate responses like in physical stores. One of the keys to online sales to increase sales is to enable users to get a better experience. The basic element of e-commerce system development is user experience.

Countermeasures

Establish and improve the food safety supervision system under the e-commerce environment. In the face of increasingly severe food safety issues in

the e-commerce environment, the central, various ministries and local departments have successively issued some documents to promote the development of food e-commerce and ensure food safety, but they do not constitute a complete food safety supervision in the e-commerce environment. System, supervision has not been implemented. Therefore, it is urgent to build a complete food safety supervision system under the e-commerce environment, establish a supervision system led by relevant government departments, self-regulation of the food e-commerce industry and self-control of food e-commerce enterprises, and give full play to the e-commerce platform Supervision function, forming a coordinated integration and multiple co-governance of food safety supervision in an e-commerce environment.

Improve food safety-related policies and regulations system in the e-commerce environment. With reference to relevant laws and regulations in developed countries and China's existing safety laws and regulations covering the entire production chain of the e-commerce industry, the legal responsibilities of various stakeholders in the e-commerce environment are further clarified. And strengthen the law enforcement of food quality and safety supervision under the e-commerce environment. Food e-commerce has the characteristics of cross-regional sales. Due to the lack of coordination mechanisms between territories, and the different penalties and penalties for food safety violations in different regions, it has brought difficulties to law enforcement in different places. At the same time, because the current penalties are weak and the cost of counterfeiting and selling fakes is low, some illegal businesses can take advantage of it. It is recommended to establish a unified national supervision and punishment mechanism so that illegal enterprises will be punished no matter where they are registered or where their products are sold. This will give full play to the deterrent effect of laws and systems, and use coercive means to ensure the effectiveness of the system. At the same time, the method of establishing a "food e-commerce network alliance" can be adopted. When any member unit discovers a problem, the products of all units of the alliance will be offline at the same time, and the integrity of food e-commerce can be improved through industry self-

discipline.

Continuously enhance the safety control and guarantee capabilities of food e-commerce companies. In the e-commerce environment, food e-commerce is the core of the supply chain, connecting upstream production entities and downstream consumers, and the self-control of food e-commerce directly determines the level of food safety. Therefore, it is necessary to strengthen its own management and control in terms of the cognitive level, moral level, and professional skills of the main body of food e-commerce, and increase its control and quality assurance capabilities at key traceability points for food safety. One is to give full play to the leading role of the core food e-commerce enterprises. Large-scale platform e-commerce and vertical e-commerce with good scale efficiency have rich experience in the development of e-commerce, have a loyal consumer group, and have the relevant voice and influence. Therefore, they should give full play to the drive of such core e-commerce Role, strengthen the self-control ability of e-commerce companies to make up for the lack of government supervision. The second is to strengthen its standardization and standardization, and improve the food safety attribute management and control capabilities of e-commerce. For food e-commerce, it is necessary to continuously improve the standard system of its supply chain management system. For food e-commerce that has set standards, it is necessary to refine the standards, strengthen the implementation of standards, and give full play to the source of food production and processing enterprises. The leading role of the core enterprise is to drive the standardized production and operation of the entire food e-commerce supply chain. Accelerate the safety certification of food production enterprises, and accelerate the certification of pollution-free food, green food, organic food and geographically-identified food under the e-commerce environment. The third is to strengthen the ability to guarantee the infrastructure such as cold storage, and continuously improve the food quality attribute control ability of e-commerce. It is necessary to further increase the construction of cold chain logistics infrastructure and cold chain logistics network, and start with the key issue of the

overall planning and integration of food e-commerce upstream and downstream, improve the efficiency of cold chain logistics operations, and reduce the operating costs of food e-commerce companies. And through modern information technology, network technology and advanced full-temperature distribution solutions, while saving social resources, reducing logistics costs, and improving efficiency, it also ensures food safety in the e-commerce environment and creates a greater economy for food e-commerce companies. In addition, the perfect food traceability system not only ensured food safety, but also was the inevitable choice to promote the sustainable development of agriculture.

DISCUSSION

Through the e-commerce platform, food is sent directly from the place of production to consumers, losing the space and time for food safety monitoring in the e-commerce environment, creating blind spots in safety supervision, and causing the supervision department to protect the rights and interests of consumers and maintain social public safety. . Although the State Food and Drug Administration promulgated the "Measures for the Investigation and Punishment of Internet Food Safety Violations" in 2016, and began to conduct random checks on food sold online, in general, in China's e-commerce environment, there are multiple departments responsible for segmented supervision, The relatively single management standard of the law enforcement supervision system is likely to cause safety risks and hidden dangers. Secondly, China's national and local governments have not yet issued standards related to food e-commerce. Without a unified and comprehensive standard, there is no way to monitor and identify food safety in an e-commerce environment. It is easy to cause the same safety issues in different regions. First, it has increased the difficulty of supervision and enforcement of food e-commerce. In addition, as the main stakeholders of food safety in the e-commerce environment, there are still "ignorance, unscrupulous, and incompetent" phenomena in the food e-commerce group. There is a lack of integrity mechanisms in transactions. The penalty is relatively light, and there is market mechanism

failure in the e-commerce environment driven by interests. Therefore, the lack of integrity mechanism and control ability of food e-commerce entities in safety is also one of the reasons for food safety problems in the e-commerce environment.

Based on the theoretical research on the control mechanism of the impact of e-commerce on food safety, this paper uses regression models to empirically verify that e-commerce can have a positive impact on the traceability of food safety. The impact is mainly manifested in three aspects: First, the development of e-commerce The production base of the company is better in safety traceability, especially in quality traceability than those that have not carried out e-commerce; second, e-commerce reduces the fact that producers in the food market conceal the true information of food due to information asymmetry, "The possibility of realizing the high-quality and high-price food in the e-commerce environment, making up for the transaction costs of food producers for the production and operation of high-quality food, and increasing the enthusiasm of producers to produce high-quality food, so that the establishment of a standardized system, Pesticide application and other aspects have a positive impact on food safety traceability to a certain extent; third, e-commerce effectively reduces food circulation links, improves the shortcomings of small and scattered traditional supply chains, and realizes integrated food delivery in an e-commerce environment. Improve the organizational ability of the circulation and distribution links, reduce the management and transaction costs in the circulation and distribution process, and suppress the opportunistic behaviors in the circulation and distribution links. Therefore, it can clean packaging materials, trace the transportation environment temperature, build food branding, and food" "Three products and one standard" certification has a positive impact on food quality traceability.

Human Subjects Approval Statement

This paper did not include human subjects.

Conflict of Interest Disclosure Statement

None declared.

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