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Research on the Whole-chain Construction, Optimization and Improvement of China's Food Safety Guarantee System in the New Era

[1]Zhang Minghan and [2]Liu Meitong,
[1,2]Beijing Wuzi University, Beijing, China

Abstract: The food safety guarantee system constitutes a vital component of the national public security system. Against the backdrop of transformation and upgrading of the food industry, rapid popularization of online food catering and continuous upgrading of consumer demands, the traditional segmented supervision can hardly meet the requirements of modern governance. From the perspective of whole-chain governance, this paper analyzes the overall framework and construction achievements of China's food safety guarantee system, identifies existing weaknesses from six dimensions: source control, process management, terminal supervision, regulatory capacity, technical support and stakeholder responsibility. It puts forward improvement strategies centering on integrated production-administration management, smart supervision, multi-party collaborative governance and institutional upgrading, so as to facilitate the establishment of an all-round, multi-level and modernized food safety governance system.

Keywords: *Food Safety; Whole-chain Supervision; Smart Governance; Subject Responsibility; System Improvement*

I. INTRODUCTION

Food safety bears on people's well-being and the modernization of social governance. China has repeatedly emphasized the necessity of improving the whole-process and whole-chain supervision mechanism for food safety, promoting the shift of food safety governance from "ex-post rectification" to "full-process prevention" and from "government-dominated single supervision" to "multi-agent collaborative co-governance". At present, the overall food safety situation in China remains stable and positive, with the sampling inspection qualification rate of staple foods staying at a high level. Nevertheless, problems such as raw material contamination, illegal additives, expired food sales, non-standard online catering and false publicity still occur from time to time. Improving the food safety guarantee system serves as a critical task for advancing the Healthy China Initiative and enhancing public governance capacity.

II. OVERALL FRAMEWORK AND ACHIEVEMENTS OF CHINA'S FOOD SAFETY GUARANTEE SYSTEM

A. Basically Complete Legal System

Taking the Food Safety Law of the People's Republic of China as the core legal basis for food safety governance, China has formulated supporting regulations including the Implementing Regulations of the Food Safety Law, various special administrative measures, local regulatory rules and relevant judicial interpretations, establishing a well-structured and comprehensive legal system for food safety. This system clarifies compliance standards, regulatory boundaries and legal liabilities covering food production, processing, circulation and catering sectors. It implements the governance principles of "the most rigorous standards, strictest supervision, severest punishment and most serious accountability", forming an integrated governance framework for risk prevention, process supervision, penalty for violations and accident accountability. It has put an end to the previous fragmented and dependent management mode for food safety governance and brought China's food safety governance into a new stage of standardization, institutionalization and rule-of-law governance.

B. Initial Formation of Whole-chain Supervision Pattern

Taking the Food Safety Law of the People's Republic of China as the core legal foundation for food safety governance, China has rolled out its supporting implementing regulations, special administrative measures and judicial interpretations, forming a systematic and complete food safety legal system. Such institutions define compliance standards and legal liabilities for enterprises in all operational links and enforce the "four strictest" regulatory requirements. From the perspective of accounting and internal control, the legal system compels enterprises to standardize cost accounting related to food safety, compliance expense management and risk-related accounting treatment. It promotes enterprises to optimize internal control and financial supervision, effectively reduces operational compliance risks, and advances the food industry toward law-based and standardized operation and supervision.

C. Continuous Improvement of Risk Governance Capacity

The national-, provincial-, municipal- and county-level four-tier food safety risk monitoring network has been basically established. Mechanisms for regular sampling inspection, special rectification and risk investigation operate steadily, which can capture hidden food safety hazards in a timely manner and rapidly respond to and properly handle all kinds of sudden food safety incidents. It provides solid support for early detection, early intervention and early resolution of food safety risks.

D. Growing Capacity for Smart Supervision

Digital regulatory tools such as "Internet + Transparent Kitchen", electronic account books, intelligent traceability systems and big-data-enabled smart supervision have been fully popularized across the food industry. Breaking information lag and data fragmentation caused by conventional manual supervision, digital supervision enables whole-process and dynamic real-time tracking of food production and business activities, substantially improving the accuracy, openness, transparency and overall modern governance efficiency of food safety supervision.

III. PROMINENT WEAKNESSES OF THE FOOD SAFETY GUARANTEE SYSTEM IN THE NEW ERA

A. Weak Source Governance and High Risks in Agricultural Products

China's agricultural production and operation are characterized by decentralization with a large number of widely distributed producers, bringing considerable management difficulties. Some farmers lack awareness of standardized production and fail to properly control the dosage, frequency and application norms of agricultural inputs such as pesticides, chemical fertilizers and veterinary drugs. Limited coverage of source supervision makes it hard to completely eliminate safety hazards arising from planting and breeding activities. Such risks will spread along the whole industrial chain of production, processing and sales and directly undermine the quality safety of end-market food products.

B. Inadequate Supervision in Circulation Links

Regulatory mechanisms for cold-chain transportation and cross-regional circulation of food remain imperfect, and industry standards are not fully enforced. Some food business operators rely on outdated warehousing facilities with substandard storage conditions, while temperature control and transportation procedures for cold-chain logistics are poorly managed. Under such circumstances, food is prone to deterioration and cross-contamination during circulation, generating latent food safety hazards and new safety risks in the circulation phase.

C. Difficulties in Supervision over New Business Forms

Driven by e-commerce, emerging business models including online food ordering, livestream-based food sales, online pre-cooked food transactions and online sales of bulk food iterate rapidly with flexible operation. Most transactions are completed online with strong concealment and fluidity. Since transaction data are scattered across diverse platforms, regulators can hardly trace the whole transaction process. Practical governance challenges include difficulties in obtaining online evidence, poor information interconnection and barriers to cross-platform collaborative law-enforcement.

D. Insufficient Regulatory Capacity at Grass-roots Level

Grass-roots food safety regulatory forces are relatively weak, featuring insufficient staffing, tight post allocation and uneven professional competence. Alongside the rapid development of the food industry, new food categories and novel food additives keep emerging, together with increasingly concealed and sophisticated illegal practices. Grass-roots regulators fail to update professional knowledge in a timely way, with limited capacity to identify, collect evidence against and investigate new food safety risks. Minor and concealed hazards may therefore escape timely detection and rectification.

E. Imbalanced Responsibilities among Multiple Stakeholders

Food safety governance relies excessively on governmental supervision, imposing heavy burdens and pressures on regulatory authorities. Meanwhile, industry self-discipline is insufficient, internal self-inspection by enterprises tends to be perfunctory, public awareness of active supervision is inadequate, and third-party professional assessment institutions have limited participation. The roles of various social governance subjects are not fully exerted, and a mature modern co-governance pattern featuring well-defined responsibilities and joint efforts has not yet taken shape.

IV. OPTIMIZATION PATHS FOR IMPROVING THE FOOD SAFETY GUARANTEE SYSTEM IN THE NEW ERA

A. Strengthen Source Governance to Build the First Line of Defense

Promote standardized and large-scale agricultural production, unify operational norms for planting and breeding, and strictly regulate application standards and procedures for agricultural inputs including pesticides, chemical fertilizers and veterinary drugs. Improve sampling inspection systems for agricultural products at origin, tighten access requirements for agricultural products entering the market, and perfect the market access mechanism for qualified agricultural products. Identify and control hidden risks at the front-end of the food industrial chain so as to reduce the probability of food safety incidents from the source.

B. Improve Supervision Systems for Circulation and Cold-chain Logistics

Improve industry standards for food cold-chain transportation and warehousing management specifications, and set mandatory criteria for storage environments and transportation equipment. Enforce whole-process temperature monitoring and complete account-keeping records. Intensify sampling inspection on cross-regionally circulated food and refine the whole-chain traceability supervision system. Pinpoint and fill regulatory blind spots and loopholes in circulation, and block the spread of food safety risks in warehousing, transportation and distribution.

C. Make up Institutional Shortcomings in Supervision of New Business Forms

For emerging food business formats such as online catering, pre-cooked food sales and livestream food marketing, further refine market access standards, information publicity rules and food sample retention systems, and clarify review obligations and primary regulatory responsibilities of online platforms. Reinforce regular online inspections, big-data-driven intelligent supervision and multi-platform joint collaborative law-enforcement, rectify chaos in online food operations and shore up regulatory weaknesses for new-format businesses.

D. Advance Modernization of Smart Supervision

Expand the coverage of the digital "Transparent Kitchen" model to cover catering outlets, small food processing workshops and other business entities. Integrate resources and unify the food traceability data platform to break information barriers among different links. Leverage big-data technology to analyze high-risk regions, industries and time periods for food safety risks, dynamically grasp industrial risk patterns, realize targeted regulation and early risk warning, and raise the overall intelligence level of food safety supervision.

E. Clarify Responsibilities of All Parties and Build a Co-governance Pattern

Define governance obligations for different stakeholders, consolidate governmental supervision responsibilities, enterprises' primary safety responsibilities, review and control responsibilities of online platforms, industry self-regulatory responsibilities and public supervision responsibilities of consumers. Establish a multi-agent food safety governance system characterized by clear division of labor, well-defined

rights and obligations as well as efficient collaboration. Step up investigation and punishment for food-related violations, perfect the joint disciplinary mechanism against dishonest market entities. Strict regulation compels business operators to standardize their conducts and elevates overall compliance across the food industry.

F. Build up Grass-roots Regulatory Teams

Expand grass-roots food safety regulatory teams and optimize staffing to address manpower shortages at the grassroots level. Establish regular professional training programs covering food safety testing, risk hazard identification, norms for law-enforcement evidence collection and supervision for new online business forms. Enhance the professional competence of grass-roots staff and consolidate the professional line of defense for grass-roots food safety governance.

CONCLUSION

China's food safety guarantee system has achieved major transformations: from initial setup to systematic improvement, and from ex-post passive rectification to proactive pre-event prevention, with markedly enhanced overall governance capacity. Nevertheless, constant innovation of food business formats and growing complexity of market operations bring forth concealed and new-type food safety risks, leaving room for further optimization of the existing guarantee system. In the future, we shall promote the coordinated implementation of whole-chain governance, rule-of-law governance, smart governance and socialized governance. Continuously remedy weaknesses in institutional norms, regulatory implementation and market-subject accountability, optimize regulatory mechanisms, innovate governance approaches and consolidate responsibilities of all stakeholders. Efforts shall be made to develop a high-standard, high-quality and sustainable modern food safety governance guarantee system, solidify the defense line for food safety, and comprehensively safeguard people's dietary health and consumption security.

References

[1] Xia Ying, Song Bosheng. Food Safety Assurance: From Quality Standard System to Comprehensive Supply Chain Management[J]. Issues in Agricultural Economy, 2001(11):59-62. DOI: 10.13246/j.cnki.iae.2001.11.013.

[2] Zhang Xiaotao. Research on China's Food Safety Supervision System from the Perspective of Regulatory Subjects[J]. China Today Forum, 2008(5):68-71.

[3] Zhao Qian, Su Yifan. On the Subject Structure of Social Co-governance for Food Safety[J]. Journal of Southwest University (Social Sciences Edition), 2022,48(4):64-75. DOI: 10.13718/j.cnki.xdsk.2022.04.007.

[4] Yao Xuan. Food Safety Guarantee and Legal Response for Pre-cooked Food in China[J]. Storage and Process, 2024,24(4):65-70.

[5] Binh T D A, Abbas J, Quang T H, et al. Enabling circular economy outcomes through smart food safety management systems: evidence from ISO 22000 and HACCP certified agri-food firms[J]. British Food Journal, 2026,128(10): 4214-4239. DOI:10.1108/BFJ-11-2025-1605.