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INTERNATIONAL PRACTICES OF IMPLEMENTING FOOD SAFETY SYSTEMS (HACCP, ISO, GMP): PROSPECTS FOR SMALL AND MEDIUM BUSINESSES

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Abstract. *Relevance of the topic.* Against the backdrop of the globalization of food markets, increasing requirements for the quality of food products and the transition to European standards, the issue of implementing food safety systems in the work of small and medium-sized enterprises is becoming particularly relevant. For Ukrainian SMEs, these systems are not only a means of complying with sanitary standards, but also a strategic mechanism for increasing competitiveness, expanding sales markets, strengthening consumer confidence and ensuring integration into international supply chains. *Purpose and object of the study.* The purpose of the article is to analyze and substantiate the prospects for the development of small and medium-sized enterprises in the food industry based on the implementation of integrated food safety systems. The object of the study is food safety management systems (HACCP, ISO 22000, GMP) and their role in the strategic development of SMEs. *Research methods.* Systemic, comparative and analytical approaches, SWOT analysis, content analysis of international regulatory documentation and statistical reports, as well as the method of generalizing the practical experience of certified SMEs were applied. *Practical significance.* The results show that the implementation of integrated food safety systems increases management efficiency, minimizes risks, reduces production losses and opens access to international markets. *Results.* The study demonstrated that HACCP, ISO 22000 and GMP standards form a holistic strategic management model for SMEs, which ensures resilience, adaptability and long-term competitive advantage in a global environment.

Keywords: small and medium-sized enterprises, food safety, HACCP, ISO 22000, GMP, competitiveness.

JEL Classification: L15, L66, Q18

1. Introduction

Under the current conditions of internationalization of supply chains and the growth of the share of ready-to-consume products, the issue of ensuring food safety is transforming for small and medium-sized businesses (SMEs) from a narrow technological challenge to a strategic development factor, since it is standardized approaches to risk management that enable SMEs to reduce transaction costs, increase market trust, and open access to new sales channels, including network retail and export-oriented contracts that require process consistency, traceability, and verified quality at all stages of the product life cycle.

Institutionalization of food safety systems based on HACCP, ISO 22000 and GMP is not only a tool for SMEs to comply with regulatory requirements and minimize technological and microbiological risks, but also an effective mechanism for increasing operational efficiency through standardization of procedures, implementation of traceability and a culture of preventive control, which, in turn, reduces losses from defects, shortens the time for eliminating deviations and increases the reputational capital of the enterprise. The outlined factors and actualize the need for a comprehensive study of the prospects for the development of SMEs through the prism of the implementation of these systems.

According to the position of Aslam, Aslam & Shahbaz (2025), in world practice there is an evolution from a reactive model of quality

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control to preventive risk management systems based on international standards HACCP, ISO 22000, GMP, BRC and FSSC 22000. Bovay's (2022) study shows that rigorous compliance with safety requirements determines not only consumer loyalty, but also the formation of a stable corporate reputation, which is a critical factor in the competitive positioning of enterprises.

In his works already Awuchi (2023), Lopes and al. (2025) argue that the synthesis of HACCP standards with the ISO 9001 quality management system provides a holistic monitoring of the food chain "from farm to fork", which is of particular importance for small and medium-sized enterprises (SMEs) focused on international certification. Similar conclusions are presented in the works of Mureşan and al. (2020) and Spanova and al. (2025), who substantiate the possibility of effective implementation of HACCP systems even in small-scale production, provided that technological processes are adapted and systematic auditing is carried out. In turn, Strashynska (2019) conceptualizes ISO 22000:2018 as a universal mechanism that synthesizes the principles of the PDCA cycle and risk-based thinking, enabling not only regulatory compliance, but also optimization of the operational efficiency of enterprises. Researcher Andriani and al. (2021) demonstrates that the application of good manufacturing practices (GMP) significantly reduces the likelihood of microbiological and chemical contamination of products.

Significant scientific achievements in the study of the issue were made by Ulfat (2025) and Basic and al. (2025), who analyzed the international dimensions of food standards harmonization and compliance verification mechanisms in global supply chains. Their empirical results confirm that the intensification of regulatory coordination between states determines the level of food safety and catalyzes export dynamics. Thus, modern scientific discourse indicates that the implementation of international food safety systems constitutes not only a technical necessity, but a strategic prerequisite for the development of SMEs, which ensures innovative capacity, resilience and integration into the global food space.

2. Research Methodology

The methodological basis of the study constitutes a systematic approach that integrates theoretical, analytical and practical levels of studying the process of implementing food safety systems for SMEs. To achieve the research goal, methods of comparative analysis of international standards, content analysis of official regulatory documentation of the EU and Ukraine, as well as generalization of practical experience of certified food producers were used. At the empirical level, methods of expert assessment of the effectiveness of implementing quality management systems in SMEs, structural and logical modeling of the stages of integration of HACCP, ISO and GMP standards, as well as elements of SWOT analysis were used to identify barriers and prospects for the development of enterprises in the context of their adaptation to international food safety requirements.

3. Theoretical Foundations of Ensuring Food Security in the System of Strategic Development of SMEs

In the context of the deep integration of national economies into the global economic system and the growth of competitive pressure on markets, ensuring compliance with food safety requirements is becoming a strategically important task, especially for SMEs. They often face limitations in financial, human and technological resources, which complicates their ability to quickly adapt to changes in the regulatory environment and the requirements of international markets. Under such conditions, the direct implementation of modern food safety management systems, in particular the HACCP principles (Hazard Analysis and Critical Control Point Analysis and Critical Control Points), ISO standards (e.g. ISO 22000) and GMP (Good Manufacturing Practices) practices. Manufacturing Practices) goes beyond the formal implementation of legislative norms. The practice of ensuring the proper level of quality is based on the microbiological purity of products, since it is the criterion not only for sanitary safety, but also for the technological stability of production processes (Bomba & Susol, 2020). The structure of the production cycle of food enterprises uses various additives, raw ingredients and auxiliary materials of both physical and biological or chemical origin, which come from different suppliers. The presence of counterparties in this supply chain without a proper product safety management system creates a real threat of potentially dangerous components entering

the enterprise, which can lead to a violation of sanitary standards and the emergence of risks for the end consumer (Salavelis et al., 2025).

A characteristic feature of SMEs in the food industry is that potential safety violations can occur at any stage of the product life cycle – from the procurement of raw materials and processing to the transportation, storage and sale of finished products. Even minor technological errors, imperfections in technical processes or the human factor can become a source of contamination and a decrease in product quality. The environmental aspect of SMEs' activities is of particular importance, even if the safety standards of the products themselves are met, production waste and disposal processes can harm the environment, indirectly affecting public health (Makedon et al., 2025). Thus, the entire package of risks arising in the production and sale of food products requires not only compliance with technical and sanitary standards, but also the formation of a holistic philosophy of responsible production.

One of the truly effective areas of improvement is the implementation of food safety management systems, which include HACCP, ISO 22000 and GMP standards, which were created on the basis of many years of international experience for SMEs in the food industry. The authors take into account the multifactorial nature of risks and the diversity of their origin, the most effective approach is recognized as an integrated management system that combines the requirements of the ISO 9000 series, ISO 22000, HACCP and GMP standards, which integrate both quality and product safety issues. It is this model that creates conditions for SMEs not only to establish compliance with international requirements, but also to obtain strategic advantages in the form of expanding access to foreign markets (Table 1) (Brykova, 2024).

Table 1
Prospects for the implementation of food safety systems for the development of SMEs

Standard/ System	Short description	Benefits for small and medium-sized businesses	Implementation challenges and development prospects
ISO 22000:2018	A food safety management system covering the entire supply chain	Reduces pollution risks, increases competitiveness in export markets, facilitates access to EU certification. For SMEs: savings on fines and product recalls (up to 20-30% of costs)	High cost of certification (from 5,000 euros); prospects: state subsidies in Ukraine until 2027, sales growth of 15-25% after implementation
HACCP	Risk analysis and critical control points to prevent hazards in production.	Improves reputation, reduces waste (up to 10%), simplifies quality control. For SMEs: fast implementation (3-6 months), mandatory for imports into the EU	Requires staff training; prospects: integration with digital tools, organic market growth of 40% by 2030.
GMP (Good Manufacturing Practices) Manufacturing Practice)	Good manufacturing practices to ensure hygiene and quality at all stages	Increases production efficiency, minimizes defects (up to 15%). For SMEs: low entry threshold, improved customer loyalty in local networks	Limited resources for auditing; prospects: combination with ISO for comprehensive certification, expansion of 20% market share in the healthy food segment.
FSSC 22000	Certification scheme based on ISO 22000 and PAS 220, recognized by GFSI	Provides global recognition, facilitates entry into international chains. For SMEs: increased investor confidence, 30% increase in exports	Difficult for beginners; prospects: EU grants for SMEs (up to 50% of costs), projected growth of the sector by 25% due to digitalization
IFS (International Featured Standards)	European HACCP-based standard for retail chain suppliers	Adapted for SMEs, focus on innovation; increases contracts with supermarkets (by 20-35%)	Regional specifics; prospects: integration with e- commerce, expansion into Eastern European markets with the potential for +18% annual growth
BRC Global Standard	British Standard for Food Safety, Emphasis on Traceability	Improves traceability, reduces crisis response risks. For SMEs: access to the UK market, logistics optimization	High documentation requirements; prospects: post- Brexit adaptation , 22% growth for Ukrainian exporters by 2028.

Source: compiled by the author based on Andriani and al. (2021), Lopes and al. (2025), Spanova and al. (2025)

In world practice, the ISO 22000 system is today the most common tool for comprehensive food safety and quality control, but other standards have also become widely used, namely GMP, BRC, IFS, which together form a multi-level system of harmonized approaches to food safety management.

4. Integrated Management Systems as a tool for Increasing the Strategic Capacity of SMEs

The introduction of a product safety management system allows SMEs not only to ensure compliance with current legislation, which is based on hygienic and technological standards, but also to integrate control processes into a single logical management structure, where production, sanitary, logistics and marketing components function in an interconnected manner. Among modern approaches to ensuring food safety, the PAS 220:2008 standard deserves special attention, which was developed on the basis of a partnership of the world's leading food manufacturers% *Danone, Kraft, Nestlé* and *Unilever,* which are in close cooperation with the Confederation of European Food and Beverage Manufacturers (CIAA) (Sakhanenko, & Nagorna, 2025). This document sets out the rules for the functioning of a system of publicly available specifications that regulate risk control methods at the internal production level, especially for those enterprises that supply products to large retail chains. The PAS 220 standard is considered a logical complement to ISO 22000, which together form a comprehensive food safety management system that provides for the prevention of hazards at any stage, from the production of raw materials to the sale of the final product (Kryvokhyzha et al., 2024).

For SME groups, the combination of ISO 22000 and PAS 220 requirements provides all the opportunities to create a transparent control system, increase the level of internal discipline, optimize production processes and establish cooperation with suppliers and customers based on trust. The PAS 220 standard occupies an intermediate position between internal corporate and national standards, which allows the enterprise to create uniform control rules at the industry level (Fig. 1).

At the same time, practice shows that there is no universal recipe for creating an integrated management system (ISM) that ensures a full level of food safety. What works effectively in one enterprise cannot always be automatically reproduced in another due to differences in scale, production structure, human resources, financial capabilities, or even corporate culture (Makedon et al., 2024). For SMEs, this problem has become especially acute, since the implementation of such systems requires careful adaptation to local conditions and resources of the enterprise (Table 2).

A study of the basic trends in the development of the food industry and the experience of integrating management systems shows that the basic elements of an effective ISM for SMEs should be the following components (Food Standards Australia New Zealand, 2025):

1) A quality management system (QMS), which forms the basis for creating trust in products and ensures consistency of production and management processes;

2) Food Safety Management System (ISO 22000), which regulates risk monitoring, identification of critical control points and preventive measures;

3) Good Manufacturing Practices (GMP) system, which includes maintaining sanitary conditions, personnel control, equipment cleanliness, and technological discipline;

4) Environmental management system (ISO 14001), which ensures minimization of environmental impact;

5) Occupational health and safety management system (OHSAS 18001 or ISO 45001), which guarantees safe working conditions;

6) Social responsibility system (ISO 26000), which regulates the ethical, social and communication aspects of the company's activities (Brovenko et al., 2025).

The combination of the above groups of components forms a single integrated structure, where each element reinforces the others, creating a synergy effect. For SMEs, this means the opportunity not only to optimize internal processes, but also to increase the trust of consumers, partners and regulatory authorities, which is especially important for entering foreign markets.

5. Prospects for the Development of Small and Medium-Sized Businesses Through the Implementation of Food Safety Systems

Building an integrated management system for SMEs can be done by analogy with creating a quality management system in accordance with the ISO 9000 series of standards. The general

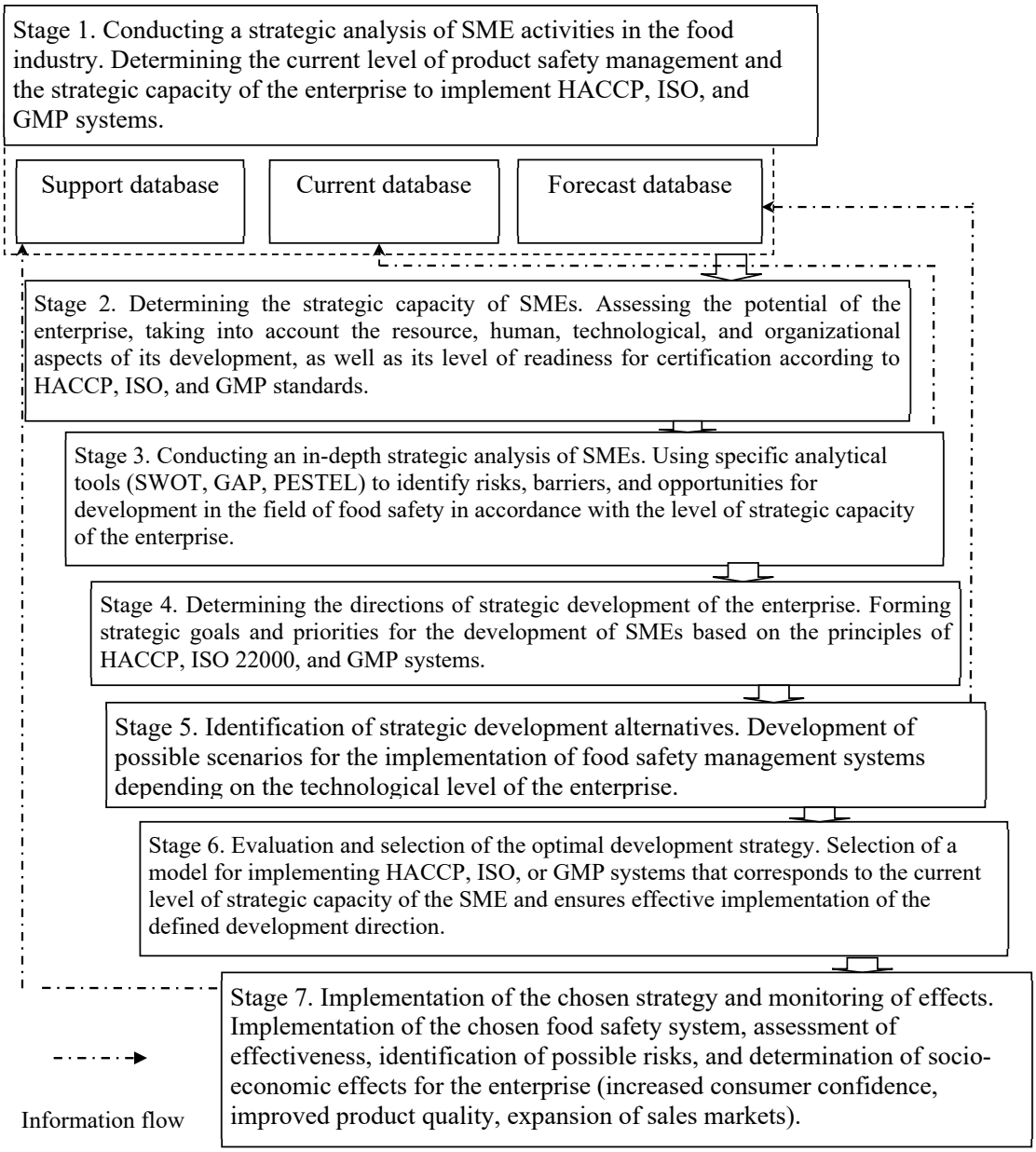

Figure 1. Stages of forming a strategic direction for SME development through the implementation of food safety systems

Source: developed by the author

sequence includes several stages. The first step is to conduct a preliminary diagnostic audit, which allows to assess the current state of processes, identify weaknesses and potential risks. The next stage is the design of the ISM, which determines the structure, responsible persons, methods of collecting and analyzing information, as well as criteria for assessing effectiveness.

An important component of the process is comprehensive training of personnel, from managers to performers, which will involve further training, seminars and certifications aimed at forming a safety culture at all levels of the organization. Next, the development of ISM documentation takes place – policies, procedures, instructions, action plans that regulate each stage of the production process. After that, the system is gradually implemented in the practical activities of the enterprise, which is accompanied by constant monitoring and internal audit of performance. The final stage will be ISM certification, which confirms the compliance of all processes with the requirements of international standards and is an

Table 2

Integrated management systems for ensuring food safety in SMEs in the food industry: development prospects

Management system	Objects of influence on SME business processes	Implementation goals for sustainable development	Recommended standard and growth prospects
Quality management system	Main production processes, raw material control and supply logistics	Increased competitiveness through stable product quality, increased customer loyalty by 15-20%	ISO 9001; prospects: expansion of sales markets by 25% by 2030 due to certification for export to the EU
Food safety system	Contamination risks, production hygiene and supply chain traceability	Ensuring safe product release, reducing waste by 10-15% and avoiding fines	ISO 22000; prospects: integration with HACCP for SMEs, projected 30% increase in profits through access to global networks
Good Manufacturing Practices System	Production conditions, personnel training and minimizing the human factor	Resource optimization, 20% reduction in scrap, increased efficiency for small businesses	GMP; prospects: combination with digital monitoring , 18% productivity increase in the organic segment
Environmental management system	Environmental aspects of production, waste disposal and energy consumption	Reducing negative environmental impact, receiving EU grants for 40% of costs for SMEs	ISO 14001; prospects: green certification for sustainable development, expansion into eco-markets with potential for +22% annual growth
Personnel health and safety system	Occupational risks, workplace ergonomics and health monitoring	Reduction of accident rate by 25%, motivation of employees for innovation in SMEs	OHSAS 18001 (or ISO 45001); prospects: integration with GMP, improving reputation and attracting investments by 35%
Social responsibility system	Ethical practices, community engagement, and supply chain transparency	Integrating CSR for long-term development, increasing consumer trust by 20%	ISO 26000; prospects: focus on local SMEs, brand growth through social initiatives with ROI up to 28%

Source: compiled by the author based on Aslam, Aslam & Shahbaz (2025), Brovenko et al. (2025)

important condition for entering foreign markets (Prylipko et al., 2025).

For SMEs operating in the food industry segment, the development and certification of an integrated management system has a number of advantages. Firstly, it reduces costs, as it avoids duplication of control procedures within different standards. Secondly, it helps to increase efficiency, ensuring transparency of management decisions and accountability at all levels. Thirdly, it forms a sustainable reputation of the enterprise as a responsible manufacturer, which is especially important in the context of increased consumer demands for quality and environmental friendliness of products.

The integration of HACCP, ISO 22000, GMP and other standards helps small and medium-sized enterprises not only to meet basic regulatory requirements, but also to become part of the global system of trust in the field of food safety. This opens up new opportunities for cooperation with international partners, supply of products to large retail chains, participation in public and private tenders. In the future, such enterprises gain a higher level of resilience to crisis situations, reduce production losses, improve financial performance and the ability to innovate.

Thus, the implementation of food safety systems is not only a technical or regulatory task, but a comprehensive strategy for the development of small and medium-sized businesses. It constitutes the basis for sustainable growth, contributes to increasing investment attractiveness, integrates Ukrainian producers into international supply chains and ensures the transition from local competitiveness to systemic positioning in the global market. In this context, HACCP, ISO, GMP standards function not as a bureaucratic requirement, but as an effective strategic management tool capable of providing SMEs with stability, adaptability and competitiveness in the long term.

6. Conclusions

It has been determined that for small and medium-sized businesses, the implementation of food safety systems (HACCP, ISO 22000, GMP) is not only a tool for compliance with regulatory requirements, but also a key factor in strategic development. A systematic approach to product safety management ensures the transition from local quality control to an integrated risk management model at all stages of production, reduces costs caused by defects and sanctions, and increases consumer confidence.

It is substantiated that the integration of ISO, HACCP and GMP standards into a holistic management system generates a synergistic effect for SMEs, as it enables the combination of quality management, safety, environmental friendliness and social responsibility within a single structure. This contributes to increasing the efficiency of resource use, minimizing risks, forming a corporate culture of safety and creating a mechanism for continuous improvement of production processes. The use of integrated systems enables small and medium-sized enterprises to access grants, preferences and partnerships with global networks, ensuring their sustainable development and financial resilience in the long term.

It has been established that the strategic capability of SMEs in the food industry is directly determined by the level of implementation of food safety management systems. The introduction of HACCP, ISO 22000 and GMP forms risk forecasting mechanisms in enterprises, increases technological discipline and the quality of management decisions. The results obtained show that certification according to international standards increases the profitability of enterprises by 15–30%, reduces the volume of defects by 10–20% and expands sales channels. Thus, food safety systems are transformed from a technical requirement into a strategic development resource that ensures the competitiveness of SMEs in national and global dimensions.

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