

THE HACCP SYSTEM AS A GUARANTEE FOR FOOD SAFETY IN UKRAINE

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ABSTRACT

The research points out the principal concept of the HACCP system, ensuring product safety along the whole food chain 'from the field to the table'. It focuses on HACCP as the food safety management system that proved to be effective and has been accepted globally. In recent years the HACCP system has been gradually introduced in Ukrainian business entities. The article reveals the emergence of the HACCP system and the adaptation of the legal base of Ukraine in the area of food safety requirements. It provides evidence that the harmonization of Ukrainian and international standards in the field of food quality and safety calls for the necessity to introduce HACCP-conforming technologies at all stages of production in Ukrainian companies. The results of the audits of food product safety in Ukraine for the period 2016–2019 were evaluated.

Key words: management system, HACCP, Critical Control Point (CPC)

JEL codes: M40, L15, K13

INTRODUCTION

Food safety is a global problem requiring the managerial tool that provides measures for building an effective hazard control system. Nowadays, food safety management systems acquire particular attention in

many emerging markets. In Ukraine, standards such as DSTU 4161-2003 'Food Safety Management System. Requirements' and DSTU ISO 22000:2007 'Food Safety Management Systems. Requirements to the organization of the food chain' establish the framework for the development and implementation

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of food safety management systems according to the HACCP principles (KhASSP, 2019). Following amended and supplemented the Law of Ukraine 'On food safety and quality' of 1997 (Zakon Ukrainy vid 23 hrudnia 1997 r. No 771/97-VR), food manufacturers have to ensure the safety and quality of manufacturing and food circulation under the requirements of the HACCP system (Systema HASSR v Ukraini, 2020).

THEORETICAL FRAMEWORK

Hazard Analysis and Critical Control Point (HACCP) is a scientifically based risk management system assuring safe food production. The core concept of HACCP is to ensure product safety all along the food chain 'from the field to the table' (Istoriia stvorennia HACCP, 2016). Mayes and Mertimor (2005) analysed and summarized the experience of applying HACCP in the food industry worldwide. Deming elaborated on the theory of quality management that was widely used to solve critical issues of Japanese food quality in the 1950s. He was among the authors who developed the concept of Total Quality Management (TQM) focused on the integrated approach to manufacturing, improving quality, and cutting costs (Systema HASSR, 2003). However, the role of regulatory authorities in the development and application of HACCP remains crucial (Commission Regulation (EC) 466/2001).

Hazard Analysis and Critical Control Point proved to be a food safety management system that demonstrated its effectiveness and has been approved by many international organizations (Systema HASSR v Ukraini, 2020). However, the harmonization of domestic and international food quality and safety standards requires introducing HACCP-conforming technologies at all stages of food manufacturing in Ukraine. Moreover, there is a need for further research devoted to the functioning of food safety systems in Ukrainian agri-food enterprises.

MATERIALS AND METHODS

This article aims to study the evolution of the development of the food safety management systems and identify the ways of implementing HACCP under the

legislative framework in Ukraine. The methods used in the research included induction and deduction, comparison and generalization, and retrospective analysis. The data on the government control of food safety in business entities were provided by the State Service of Ukraine for Food Safety and Consumer Protection.

RESULTS AND DISCUSSION

The introduction of an adequate food quality management system requires primarily training of top management, the HACCP team, and operational controllers whose work affects food safety. It may lead to a change in technological processes or packaging methods, revision of rules for raw materials suppliers, replacement of production facilities, or redeveloping of premises. Therefore, it is essential to motivate the employees of all levels in the organization to implement the quality control and food safety system (Systema HASSR v Ukraini, 2020). The advantages of the introduction of the HACCP system are presented in Figure 1.

The phases of the evolution of HACCP globally and in Ukraine are presented in Table 1. An assessment of the development of the HACCP system suggests that Ukraine has adopted several legislative acts recently aimed at increasing food quality.

In Ukraine, four government bodies are in charge of controlling food safety, including the Ministry of Health of Ukraine (the State Sanitary and Epidemiological Service of Ukraine), the Ministry of Agrarian Policy and Foodstuffs of Ukraine (the State Veterinary and Phytosanitary Service of Ukraine), the Ministry of Economic Development and Trade of Ukraine (the State Committee of Consumer Safety and Health), and the Ministry of Environmental Protection (the State Ecological Inspection). These bodies control certain production areas rather than assure product safety as a whole. They contribute to the popularization of HACCP and its implementation to enhance control efficiency at all stages of food manufacturing and achieve high product quality.

To fulfil the obligations of the Association Agreement with the European Union, Ukraine is reforming its system for state control over food quality and

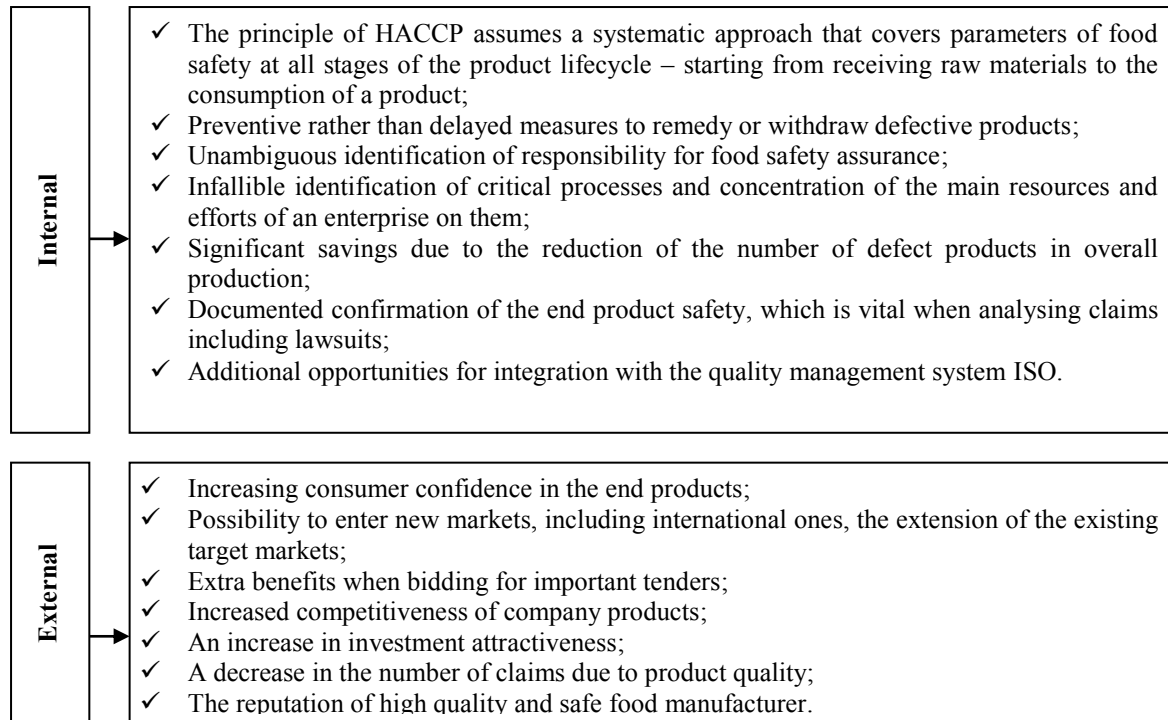


Figure 1. The advantages of the implementation of the HACCP system

Source: formed on the base (Istoriia stvorennia HACCP, 2016).

safety to ensure the protection of human life, health, and legal rights. In Ukraine, the requirements for developing and implementing food safety management systems under HACCP are enforced by DSTU 4161-2003 'Food Safety Management System. Requirements' and DSTU ISO 22000:2007 'Food safety management systems. Requirements for the food chain organization' (Holovni polozhennia..., 2019). The standards combine generally accepted key elements covering the interactive information, the system control, the prerequisites, and the principles of HACCP for agri-food companies. The gradual introduction of the HACCP system in Ukraine involved manufacturers of pork, beef, chicken, milk in 2017; confectionery factories, processing enterprises, fruit and vegetable manufacturers in 2018; and small food enterprises in 2019. The control over food safety under the principles of HACCP is conducted by the State Service of Ukraine of Food Safety and Consumer Protection regularly (Table 2).

The information provided by the State Service of Ukraine for Food Safety and Consumer Protection showed that in 2019 the number of inspections increased, and 19 597 people were brought to justice.

Implementing the food management system is possible due to the adoption of seven HACCP principles that represent generalized requirements and identify hazards in the production chain to ensure product safety for consumers. This system covers all stages of food manufacturing on their way to consumers, such as the supply of raw materials, food manufacturing and processing, and distribution.

The compliance of Ukrainian manufacturers with HACCP requirements results in promoting national food products on the global market and the intensification of international trade. In 2019 the implementation of international treaties such as 'Protocol of Veterinary and Phytosanitary Requirements for the Export of Rapeseed' with the People's

Table 1. The selected points of the evolution of HACCP globally and in Ukraine

Period	Description of the period
1959	For the first time, HACCP was developed in the United States by the Pillsbury Company, working for the NASA. It was vitally important to ensure food safety for American astronauts.
1971	HACCP was presented at the First American National Conference on Food Safety and approved for implementation in the food industry.
1973	US Food and Drug Administration (US FDA) approved the HACCP concept.
1985	HACCP was recommended by the National Academy of Sciences of the USA for microbiological risk control.
1989	Manual on the Development and Implementation of HACCP, which featured and analysed seven principles of HACCP and outlined six main types of microbiological hazards, was published by the National Advisory Committee on the United States Microbiological Criteria for Food.
Since 1990	HACCP became mandatory for use in the USA, Canada, Australia, New Zealand, and some other countries.
1993	Codex Alimentarius Commission (CAC) published a set of guidelines for the development and implementation of HACCP (FAO, 2007). Council Directive 93/43/EEC on the hygiene of foodstuffs, suggesting the mandatory application of control systems based on the HACCP principles in food manufacturing, was adopted in the EU (Regulation (EC) 852/2004).
1996	HACCP rapidly spread in food-processing companies in America, Europe, and Australia. Nowadays, the implementation of the HACCP method in the food industry, as well as HACCP certification in the countries of the European Union, the USA, and Canada, are mandatory.
1997	CAC/RCP Standard 1-1969 (Rev. 3-1997) was revised and supplemented with the standard 'System of the Analysis of Hazards and Critical Control Points (HACCP) and application guidelines'.
2002	Regulation (EC) 178/2002 of 28 January 2002 establishing the general principles and requirements of food law, establishing the European Food Safety Authority, and laying down procedures in matters relating to food safety.
2003	The latest revision of Rev. 4-2003 CAC/RCP 1-1969 'Codex Alimentarius Commission, Joint FAO/WHO Food Standards Programme. General principles of food hygiene' was published.
2004	Regulation (EC) 852/2004 'On Food Hygiene', which replaced Directive 93/43/EU was adopted.
2005	International Standard ISO 22000:2005 'Food Safety Management Systems. Requirements for any organization in the food chain' was introduced by the ISO organization.
2006	The application of the HACCP system became mandatory in EU countries.
2010	New Certification Scheme FSSC 22000 was adopted. HACCP became the basis for international standards such as BRC Technical Standard, IFS, SQF 2000 Standard, Dutch HACCP.
2011	In the Republic of Belarus, the Republic of Kazakhstan, and the Russian Federation, the implementation of the principles of HACCP for all organizations involved in food production became mandatory following the Technical Regulation of the Customs Union 'On food safety' (TR CU 021/2011). National standard DSTU-N CAC/RCP 1:2012 'Foodstuffs. Guidance on the general principles of hygiene' (CAC/RCP 1-1969, Rev. 4-2003, IDT) was adopted in Ukraine.
2014	European model of food safety and quality system based on HACCP procedures was introduced in Ukraine. A single food safety supervisory body was created, authorizations and procedures non-existent in the EU were cancelled, and the European principles of the GMO regulation, in particular, registration of the GMO sources in Ukraine, were adopted.
2015	Order of the Ministry of Agrarian Policy and Food of Ukraine approved the amendments to the requirements for the development, implementation, and application of permanent procedures based on the principles of the Food Safety Management System (HACCP).
2016	Chapter VII of the Law of Ukraine 'On basic principles and requirements to food safety and quality – general hygiene requirements to food products' came into force, requiring all food business operators to have HACCP prerequisite programs (hygiene requirements) (Parliament of Ukraine, 2016).
2017	Order of the Ministry of Agrarian Policy and Food of Ukraine under the title 'Approval of the form of the audit report on the compliance of market operators with the requirements of the legislation regarding permanent procedures based on the principles of the system of analysis of dangerous factors' came into force. Order of the Ministry of Agrarian Policy and Food of Ukraine 'Approval of the form of the state control report on the observance of the food hygiene by market operators' was put into force.
2018	Resolution of the Cabinet of Ministers of Ukraine 'Procedure for determining the frequency of implementation of planned measures of State control for compliance of market operators with the requirements of the legislation on food, feed, animal health, and welfare, performed by the State Service for Food Safety and Consumer Protection, and the criteria for the degree of risk of its implementation' was adopted. Law of Ukraine 'Information on food for consumers' made Ukrainian legislation compliant to the EU Regulation 1169/2011 of 25 October 2011 on providing consumers with food information (Zakon Ukrayiny vid 6 hrudnia 2018 r. No 2639-VIII).

Source: formed by authors.

Table 2. The control over food safety in Ukraine in 2016–2019

Indicator	2016	2017	2018	2019
Business entities controlled	320	644	235	752
Violations have been detected (%)	67.8	39.0	37.3	44.0
Brought to administrative responsibility (number of people)	184	1 376	3 505	19 597
Refunded by perpetrators (thous. UAH)	30.4	189.7	7 114	15 964

Source: formed on the base the SSUFSCP database (2020).

Republic of China (USDA FAS, 2019), and 'Protocol for Exported Honey with the Republic of Lithuania' (WTO, 2019) proved the expansion of Ukrainian food exports.

CONCLUSIONS

Based on the results of the research, the following conclusions have been formulated:

1. The introduction of an effective food safety management system is necessary for ensuring operational control throughout the management structure of a business entity, including top management, HACCP team, and workforce responsible for operations. However, due to a series of measures implemented by the Government of Ukraine for the implementation of HACCP, unfortunately, there are still some obstacles, including the low level of knowledge and lack of experience of managers, limited provision of adequate financial resources for the HACCP assurance, turbulent business, and juridical environment, and deficient public awareness on the need for implementation of the principles of the HACCP system in the food chain.
2. Ukraine adopted several legislative acts and gradually introduced HACCP in 2017–2019 for 200 000 entities operating in food manufacturing and distribution, education, health, and social services.
3. To facilitate the effectiveness of state control over the implementation of procedures based on the principles of HACCP, the Ministry of Agrarian Policy of Ukraine adopted regulations on the audits of food safety among market operators.
4. Implementation of HACCP in agribusiness entities provided many benefits for Ukrainian

customers, including better government control, the legal responsibility for violations of standards, and timeliness in preventing risks for food safety.

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