ANNOTATION

to the dissertation of Riza Alimakhunovna Murabildayeva
on the topic «Food security of Kazakhstan: state analysis and ways to ensure», submitted
for the degree of Doctor of Philosophy (PhD)
under the educational program «8D04102 – Economics»

Relevance of the research topic.

Food security is a focal point under Goal 2 of the Sustainable Development Goals (SDGs) established by the United Nations, which aims to eradicate hunger, enhance food accessibility, and promote sustainable agricultural practices. In his address to the citizens of Kazakhstan titled «The Economic course of a just Kazakhstan» President Kassym-Jomart Tokayev underscored the need to boost agricultural productivity, improve the competitiveness of local products, and ensure that essential food items are available in the domestic market. Furthermore, during his speech at the United Nations Food Systems Summit, President Tokayev emphasized Kazakhstan's vital role within global food supply chains. The Summit specifically addressed the necessity for environmental modernization and sustainable development in the agro-industrial sector while also focusing on achieving sustainability across economic, social, and environmental aspects of food security. Throughout the pandemic, countries worldwide grappled with challenges related to food security. Disruptions in international supply chains, heightened logistical constraints, and significant price fluctuations have underscored the critical importance of food security. It was reaffirmed that a nation's food security level hinges on safeguarding its domestic market, establishing reserves within its borders, and implementing effective government regulatory frameworks.

Additionally, irrational exploitation of natural resources coupled with increasing demand for livestock products and rising consumer prices has intensified issues surrounding food security. Society faces an increasing presence of counterfeit goods; harmful products are being promoted while genetically modified organisms (GMOs) are entering markets. The persistence of these issues adversely affects public health and quality of life while posing threats to the preservation of the national gene pool.

Kazakhstan's natural and climatic conditions are conducive to cultivating various vegetable, grain, and legume crops. Nevertheless, despite annual increases in areas dedicated to vegetable cultivation, imports have not diminished. The inadequate supply levels in certain segments of the domestic market highlight unresolved challenges within the national food supply system. These factors affirm the significance of this research topic and justify examining food security as a subject for academic inquiry.

The theoretical and methodological significance of this research arises from its capacity to tackle recognized challenges while emphasizing its scholarly relevance. In light of climate change and geopolitical unpredictability, achieving food security requires the formulation of innovative analytical methods aimed at improving resilience and adaptability. Within this framework, it is essential to identify developmental pathways

through an exploration of external influences, alongside offering actionable recommendations that promote sustainability by merging economic factors with climatic and institutional considerations.

Degree of Study of the Problem

The initial scientific investigations into the theoretical and methodological principles of national food security were primarily conducted by international researchers. Notable studies still pertinent today include those by Wilhelm von Humboldt, Heslop H.B., Baldwin D.A., Buzan B., Waever O., Wilde J. de, Hough P., Nesadurai H., Tsereteli M., Aleksander Gorzelak, Jean-Paul Chavas, Deepayan Debnath, Parijat Ghosh, Suresh Babu, Michael Helmar, Tibebu Aragie, Sisay Genanu. These scholars' contributions illustrate the evolving understanding of food security within academic discussions. At this juncture, the definition of food security began to expand beyond mere availability of food resources to encompass economic, social, and political dimensions.

In Russia, the examination of food security issues has been undertaken by A.I. Biryukov, S.G. Afanasyev, R. Gumerov, V.S. Balabanov, E.N. Borisenko, I.P. Lupashko-Stalsky, V.K. Lomakin, E.N. Antamoshkina, U.Z. Safin, A.A. Kudryashova, O.P. Presnyakova, E.V. Serova, O.A. Chernova, and V.E. Stepanenko. Russian academics have primarily focused on food security in relation to agricultural sustainability within the country's self-sufficiency levels regarding food production as well as state regulatory measures and risks tied to reliance on global markets.

Kazakhstani scholars such as O. Sabden, A.A. Kaigordtsev, L.A. Bimendieva, A.T. Tileuberdinova,M.E Kuzembayev,M.Zh Kamenova,E.A Alibayeva,K.S Mizanbekova,R.S Akylbekov,G.A Kozhakhmetova among others have investigated factors influencing food security in their academic works. This research distinctly views food security as a multifaceted national issue that considers Kazakhstan's economic conditions, the development trends within its agro-industrial sector ,regional specifics ,population consumption patterns ,and governmental support mechanisms.

Nevertheless, the current body of research has not thoroughly explored the interplay between climatic conditions ,external economic factors ,and institutional influences affecting food security in Kazakhstan. Consequently, the unique aspect of this dissertation research lies in its systematic evaluation of these elements concerning the developmental trajectories within the agro-industrial complex.

Purpose of the Dissertation Research

The purpose of the dissertation research is to develop proposals for strengthening the food security of the Republic of Kazakhstan under internal and external economic challenges based on a comprehensive analysis of the resource potential of the agro-industrial complex and the current state of the country's food security.

Dissertation research tasks

- to develop the author's definition of the concept of "food security" based on the study of conceptual foundations and theoretical-methodological approaches to food security research;
- to determine the current state, structural features, and development trends of food security through the analysis of its indicators based on the expansion of sustainability and adaptability indicators provided by the FAO methodology;
- to investigate the resource potential of Kazakhstan's agro-industrial complex aimed at ensuring food security under global risks;
- to identify the relationship between production, structural, and climatic factors affecting Kazakhstan's food security through the construction of several ARDL models;
- to assess the effectiveness of state socio-economic programs adopted for the sustainable development of the agro-industrial complex;
- to develop comprehensive proposals for optimizing the development directions of the agro-industrial complex in order to ensure the sustainability of food security.

Object of the research

The object of the research is the country's food security system as a set of economic, organizational, and institutional relations aimed at the sustainable provision of the population with high-quality and affordable food products.

Subject of the research

The subject of the research is the mechanisms for implementing state policy in the field of food security in Kazakhstan.

Theoretical and Methodological Foundations

The theoretical and methodological basis of the research includes data related to the United Nations Sustainable Development Goals, materials of the Food and Agriculture Organization of the United Nations (FAO), World Bank information on food security issues, as well as the works of foreign and domestic scholars devoted to the study of food security problems. The study employs methods of scientific abstraction, synthesis, induction, deduction, classification, analysis, econometric, statistical, correlation, and comparative analysis, the index method, and other research methods.

The information base of the dissertation research consists of data from the World Bank, the United Nations, the Ministry of National Economy of the Republic of Kazakhstan, the Ministry of Agriculture of the Republic of Kazakhstan, the Ministry of Artificial Intelligence and Digital Development of the Republic of Kazakhstan, as well as data from the Bureau of National Statistics of the Agency for Strategic Planning and Reforms under the Ministry of National Economy of the Republic of Kazakhstan.

Scientific novelty of the research

- an author's definition of the concept of "food security" has been developed, taking into account its economic essence and structural features;
- based on the expansion of sustainability and adaptability indicators provided by the FAO methodology, the current level of food security in Kazakhstan has been determined;
- through the construction of ARDL models, the influence of production, structural, and climatic factors on Kazakhstan's food security has been assessed;
- the efficiency coefficient of the results of state programs aimed at the sustainable development of the agro-industrial complex has been calculated;
- scientifically grounded recommendations for improving the country's food security system have been developed.

Main provisions submitted for defense

- the author's definition of the concept of food security has been proposed: "Food security is the level of providing the population with high-quality food products through the sustainable development of the agro-industrial complex adapted to the impact of global turbulent risks." The scientific feature of the author's definition lies in considering food security not only as the level of food provision for the population, but also as an interconnected system that includes the physical, economic, and social accessibility of high-quality domestic products, as well as the ability of the agro-industrial complex to adapt to the changing macroeconomic environment and ensure sustainable development;
- based on the indicators of food accessibility, food availability and sufficiency, quality and safety, sustainability and adaptability provided by the FAO methodology, the current level of food security in the Republic of Kazakhstan was assessed through the calculation of food security indicators for 2016–2024;
- using the ARDL model, the influence of production, structural, and climatic factors on food security was quantitatively proven, and it was substantiated that ensuring food security directly depends not only on production volumes, but also on the structural sustainability of the agricultural sector and the impact of the external environment;
- the efficiency coefficient of state programs implemented to ensure food security and the sustainability of the agro-industrial complex was achieved, and the results of their implementation were assessed using the integral method; the necessity of increasing the effectiveness of state support measures through the introduction of digital monitoring, mechanisms for оперативе response to intermediate control results, and tools for evaluating the achievement of goals and implementation stages of state programs was substantiated;
- a concept aimed at improving the institutional and economic efficiency of agro-industrial complex programs has been proposed, characterizing the full management cycle and considering, in an interconnected manner, the stages of problem identification, formulation of strategic goals, definition of result-oriented principles, implementation

through financial and organizational instruments, control based on digital monitoring, and the achievement of socio-economic results.

Theoretical and practical significance of the research results

The results and conclusions obtained in the dissertation research may be used in the development of state programs and policies by the Ministry of Agriculture of the Republic of Kazakhstan, as well as by the Ministry of Artificial Intelligence and Digital Development of the Republic of Kazakhstan.

Approbation of research results and publications

Based on the research results, 4 scientific articles were published, including 1 article in a journal indexed in the Scopus database, 2 articles in scientific publications recommended by the Committee for Quality Assurance in Science and Higher Education of the Ministry of Science and Higher Education of the Republic of Kazakhstan, as well as 1 article in the proceedings of an international conference.

Structure of the dissertation

The dissertation consists of an introduction, three chapters, a conclusion, and a list of references. The main text is presented on 138 pages and contains 60 tables and 24 figures. The bibliography includes 175 sources.