

Mostova A.D. (2018). *Rozvytok infrastruktury prodovolchoho rynku yak umova harantuvannia prodovolchoi bezpeky* [Development of food market infrastructure as a condition for ensuring food security]. *Modeliuvannia rehionalnoi ekonomiky* [Modeling of the regional economy]. Vol. 2 (32). pp. 203–217.

ISSN 2313-027X

[http://ir.duan.edu.ua/bitstream/123456789/3877/2/Мостова 2%2832%29 2018.pdf](http://ir.duan.edu.ua/bitstream/123456789/3877/2/Мостова%202832%29%202018.pdf)

УДК 338.439

A. MOSTOVA

Alfred Nobel University, Dnipro

## **DEVELOPMENT OF FOOD MARKET INFRASTRUCTURE AS A CONDITION FOR ENSURING FOOD SECURITY**

*The organizational principles of functioning of the agrarian market infrastructure from the point of view of providing food security at the strategic level are revealed. The basic elements of market infrastructure that are important for food security are analyzed. The mechanism of state management of the formation of the food market infrastructure, taking into account economic and managerial directions, is proposed.*

Keywords: food security, infrastructure, agricultural market

### **Introduction**

Guaranteeing the food security of Ukraine in the context of ensuring the physical and economic availability of food in the conditions of a modern market economy is impossible without the formation and development of infrastructure. An important factor in the effective functioning of the agricultural and food market is the creation of conditions for maintaining the optimal ratio of supply and demand, speeding up the time of sale of foods, accelerating the turnover of capital, reducing costs of turnover and prices, forming a competitive environment. The functioning of the food market depends on the level of infrastructure development, and therefore the quantity, quality and price of food consumed by the population.

At the current stage of the development of the domestic economy, insufficient development of the food market infrastructure does not allow effective communication between producers and consumers of food. In the course of

economic reforms, the previously existing process of goods movement was disrupted, the number of additional links in the process of selling agricultural products and food increased, costs, prices, and the number of irrational transportations increased. The implementation of trade and brokerage activities is carried out in an unsystematic and comprehensive manner and is not regulated at the national level.

The formation and improvement of the food market infrastructure in Ukraine is a priority strategic direction for the creation of a civilized national market of agricultural and food products. In future, it will become a basis for the successful integration into the regional and global agro-food market. Therefore, measures to improve the efficiency and regulation of the food market infrastructure should become the basis of sustainable development of the agricultural sector, employment growth, improvement of the social climate in rural areas, development of agribusiness and the achievement of state food security.

### **Literature review**

Fundamental works of such scientists as O.V. Berezin [1], L.V. Strashynska [2], T.M. Lozynska [3], P.I. Sabluk [4], N.V. Karpenko [5], A.M. Karpenko [6], I.M. Paska [7] and others, devoted to theoretical and methodological aspects of the formation of agricultural and food markets and practical aspects of their functioning and development. Legal support for the activity of agro-food markets is represented by a number of normative legal acts.

However, issues related to the relationship between the infrastructure of the agrarian and food market and the guarantee of food security, as well as the development of the mechanisms of their state regulation, their formation and effective functioning, remain insufficiently disclosed today.

### **Research objective**

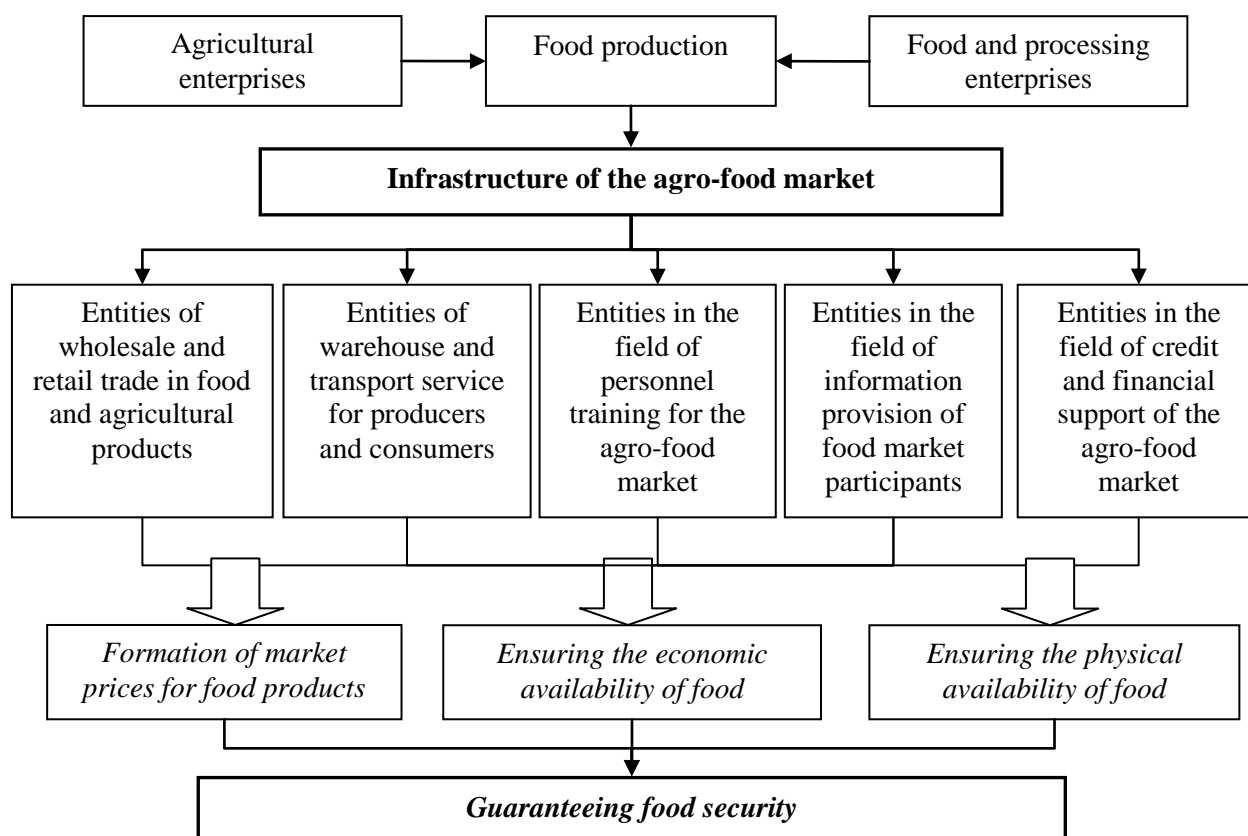
The objective of the article is to identify and research the elements of the infrastructure of the agro-food market from the point of view of ensuring food security, to develop directions for its further development.

### **Results**

In accordance with the Law of Ukraine “About the basic principles of the state agrarian policy for the period till 2015” dated 18.10.2005 No. 2982-IV, the strategic priorities of state agrarian policy include the creation and improvement of market infrastructure elements for the sale of agricultural products and food,

stimulation of development private and private-cooperative enterprises in the field of agricultural service, processing, product sales and marketing support of agricultural enterprises. The infrastructure of the agro-food market ensures the economic and physical availability of food due to the creation of favorable conditions for the functioning of economic entities in the agrarian sector, which contribute to the harmonization of the interests of the participants in the system of guaranteeing food security; introduction and implementation of modern mechanisms and methods of forming a transparent market for agro-food products, effective use of production, financial, information and labor resources.

The influence of the level of development of the infrastructure of the agro-food market on the country's food security is obvious. Figure 1 shows the relationship between food market infrastructure and food security.



**Fig. 1. The relationship between the infrastructure of the food market and food security**

*Source: developed by the author based on [1, 3-5, 9, 12]*

The specificity of the functioning of the agro-food market is justified by its structure. According to V. M. Yermolenko, such a market includes the exchange market of agricultural products, wholesale and wholesale-retail markets of

agricultural products, auctions, branded stores of agricultural enterprises, agricultural exhibitions and fairs, etc. Auxiliary elements of the infrastructure of the agro-food market are: transport, warehousing, communication, systems of price monitoring, standardization, certification, insurance, etc. [16, p. 396-397]. We will analyze the infrastructure of the agro-food market as a strategic mechanism for guaranteeing food security.

An important role in the organization of the agro-food market belongs to market infrastructure institutions, which are designed to perform the function of a generator of demand for agro-food products and, accordingly, their price. They include: agricultural exchanges, trading houses, auctions, wholesale and retail markets, etc. Their development is carried out by a certain governmental policy.

The activity of agricultural exchanges in Ukraine as subjects of ensuring food security through trade in agricultural products on the organized market is not regulated by a special legal act. According to the legislation, the Agrarian Exchange is a non-profit (non-entrepreneurial) enterprise, the founder of which can be the Cabinet of Ministers of Ukraine represented by the Agrarian Fund. The Agrarian Exchange creates a settlement and clearing center and a system for guaranteeing the performance of exchange contracts registered by it using the services of one of the state banks of Ukraine to carry out settlements under concluded exchange contracts and provide (accounting and payment) of exchange guarantees.

Therefore, the agricultural exchange is actually an association of legal entities and individuals in the field of production and intermediary activities, which creates conditions for concluding exchange contracts for agricultural products, products of their processing and goods that ensure agricultural production, and commodity derivatives, the basic assets of which are agricultural products [14, p. 4]. The Agrarian Exchange is a specific entity that participates in the organized market of certain agricultural products in accordance with the legislation.

PJSC “Agrarian Fund” is a state budgetary specialized institution, authorized to carry out state price policy in the agricultural sector of the economy, accountable and under the control of the Ministry of Agrarian Policy and Food of Ukraine.

The functions of PJSC “Agrarian Fund” in the field of guaranteeing food security consist in the creation of a state intervention fund, which must exceed 20% of the annual domestic consumption of the product for the previous marketing

period [1]. With the decrease in the consumption of food grain, the amount of the state food reserve also decreases. The role and importance of PJSC “Agrarian Fund” in modern state agrarian policy are unique and emphasized by its strategic tasks.

The elements of the market infrastructure are agricultural trading houses, created in Ukraine first in the form of joint-stock companies, later – agricultural service cooperatives. These trading houses accelerate the implemented agrarian reforms, create a market environment, develop commodity-monetary relations, profitably sell agri-food products and improve the material and technical supply of commodity producers. The legal framework regulating the activities of agricultural trading houses is quite outdated today, and therefore it can be argued that the state does not pay enough attention to this institution, despite the fact that the importance of these subjects in ensuring the food security of the state and regions remains important.

The sale of agro-food products by commodity producers is carried out at exhibitions-fairs. It allows the buyer to get the goods, and the seller – to receive the financial resources needed to support the production process. If auctions and commodity exchanges are relatively permanent events and institutions, then exhibitions and fairs are held less often, but with a clear periodicity.

Among the most famous agricultural exhibitions are “InterAgro”, “AgroExpo”, “Agro-(year)”, “Grain Tech Expo”, “Agroforum” and others. Exhibitions of agro-food products allow producers to sell their products to wholesale buyers, demonstrate the achievements of the agricultural sector, establish contacts with foreign partners, and solve industry problems. During exhibitions, conferences, “round tables” are held to discuss various issues of the development of agriculture and the agro-food market.

Fairs are not only a trade, but also an entertainment and tourist event, the holding of which is an important tool in strengthening food security, improving the image and competitiveness of the state.

It can be concluded that the government ensures the implementation of the policy on the development of the institute of wholesale and retail trade in agricultural products and food. In order to speed up the process of development of the specified institute, it is necessary to establish a mechanism for the implementation of state support measures, since most of them are currently of a declarative nature. In addition, state support for the development of wholesale and

retail markets for agri-food products should be supported by appropriate state funding.

Normative and legal regulation of the infrastructure of the agro-food market is represented by a number of normative and legal acts, in particular:

- Laws of Ukraine “About the basic principles of the state agrarian policy for the period till 2015” dated 18.10.2005 No. 2982-IV, “On State Support of Agriculture in Ukraine” dated 24.06.2004 No. 1877-IV, “On Commodity Exchanges” dated 10.12.1991 No. 1956-XI, “About Economic Societies” dated 19.09.1991 No. 1576-XI, “On Wholesale Markets of Agricultural Products” dated 25.06.2009 No. 1561-VI and others;

- Resolutions of the Cabinet of Ministers “On the Creation of the Agricultural Exchange” dated December 26, 2005 No. 1285, “On the Agrarian Fund” dated July 6, 2005 No. 543, “On Approval of the Program for the Development of Agricultural Service Cooperatives for 2003-2004” dated December 12, 2002 No. 1858, “On the improvement of exhibition and fair activities in Ukraine” dated August 22, 2007 No. 1065, “On formation of the public joint-stock company “Agrarian Fund” dated April 22, 2013 No. 364 and others;

- the order of the Cabinet of Ministers on the approval of the Concept of the State target program for the creation of wholesale markets of agricultural products dated November 19, 2008 No. 1447-p and others;

- orders of the Ministry of Agrarian Policy “On approval of the Regulation on the organization and holding of auctions of live livestock and poultry” dated 13.08.2002 No. 653/6941, “On regional agricultural marketing centers of wholesale trade in agricultural products” dated 13.11.2006 No. 660, “On raising the effectiveness of the functioning of agricultural trading houses” dated 04/20/2005 No. 163, “On the improvement of exhibition and fair activities in the system of the Ministry of Agrarian Policy” dated 04/27/2008 No. 183 and others.

An important condition for ensuring food security due to product quality is the certification of products and services on the agri-food market. It is carried out by specialized certification bodies, among which an important place is occupied by the State Service of Ukraine on Food Safety and Consumer Protection – the body for certification of food products and food raw materials. The Chief State Inspector of Veterinary Medicine supervises the veterinary and sanitary examination of economic entities regarding the slaughter of animals, processing, storage,

transportation and sale of food raw materials, food products, including those of animal origin. Official veterinary documents are issued by: an authorized state inspector of veterinary medicine or an authorized veterinarian: the administration of veterinary medicine in regions and districts, Kyiv; state institution of veterinary medicine; regional service of state veterinary and sanitary control and supervision at the state border and transport.

Warehousing and transport services for producers and consumers of the infrastructure of the agro-food market ensure the physical availability of food and affect the price of its sale to consumers through costs within the supply chain. Participants of the distribution system unsystematically create short logistics chains at individual stages of goods movement. In the production unit, this is the movement of products from the field to warehouses, in the procurement unit, they are closely related to marketing and are built along separate sales channels, in the distribution unit, and optimal transport tasks are solved.

An important stage in the formation of the final price for agricultural products and food is the storage and processing of grain crops. The development of the elevator industry in Ukraine depends on the growth of the gross collection of grain in recent years, the growth of export potential, which requires additional capacities for storing the crop. Today, there are about 800 working certified granaries in Ukraine. More than half are floor storage warehouses, the rest – in roughly equal proportions – are modern elevators with a full technological cycle, as well as old enterprises with concrete silos that have been in operation for more than 30 years and whose service life is coming to an end. About a third of all elevator capacities in the country belong to ten agricultural holdings and companies. The largest owner is the State Food and Grain Corporation.

The highest density of elevators is in the regions with the largest volumes of grain production – in Vinnytsia, Kirovohrad, Odesa, Poltava, Dnipro, and Kharkiv. The fewest elevators are in the eastern and western regions.

In the elevator market of Ukraine in 2019, 102 companies have more than one elevator (elevator networks). The largest, but also the least reliable, remains State Food and Grain Corporation. PJSC “Kernel” has the second largest number of elevators.

In addition to 51 million tons of storage at specialized elevators, Ukraine has up to 25 million tons of grain storage capacity in the farms of commodity producers. These facilities have different levels of automation and security, they

are mainly used as places of intermediate accumulation and short-term storage for the purpose of processing (cleaning, drying) collected agricultural products by small and medium-sized farmers.

Warehouses of food products in Ukraine have a low level of equipment with modern equipment, refrigeration units, packaging machines and mechanisms. As a result of privatization, large warehouse complexes were divided into small private enterprises. The creation of a large number of new legal entities has led to a reduction in the total capacity of infrastructure facilities of the agri-food market and deterioration in their technical condition, as well as an increase in costs and a decrease in the economic availability of food products for consumers.

Only some domestic retail enterprises and trade networks have well-developed logistics complexes with modern trade and warehouse management, necessary equipment, including refrigeration, transport services, etc.

The analysis of warehouse and transport service of goods manufacturers indicates a lack of elevators, warehouse complexes, specialized transport, and container stock. One of the problems of the country's agro-food market is the lack of free space in elevators for grain storage.

One of the promising directions is the construction of warehouse terminals. The development of wholesale and retail trade in agricultural products and food, the increase in monetary turnover in the country lead to an increase in cargo turnover, therefore, to an increase in demand for storage facilities. Both transport and warehouse services are developing very actively in the country, which is connected with the growth of the economy, active development of the market by domestic and foreign companies.

Therefore, the analysis of the infrastructure of the agro-food market showed certain negative aspects that hinder its formation and development to achieve the tasks of guaranteeing food security:

- lack of interaction between various subjects of the agro-food market;
- insufficient awareness of service consumers about their provision by various institutes of market infrastructure;
- lack of state support for infrastructure facilities of the agro-food market;
- inconsistency in the development of the agricultural sector and the infrastructure of the agro-food market.

In addition to measures of state support for agricultural production and compensation of individual costs of commodity producers, it is necessary to



develop and implement state and regional target programs for food security. These programs will include measures to form an effective system of sales of agro-food products through the system of supply and sales cooperatives, regional wholesale and retail agro-food markets. This is possible only if there is an updated regulatory and legal framework, as well as a food security strategy with a mandatory set of measures to develop the infrastructure of the agro-food market.

A comprehensive food security strategy and strategic directions for improvement and development of the infrastructure of the agro-food market will allow to accelerate its development, ensure rapid movement of goods from the producer to the consumer and increase the competitiveness of distribution systems based on the coordination of the activities of scientific, educational, informational, financial, and logistical structures.

The main strategic goal of the development of the infrastructure of the agro-food market is to consolidate positive trends in its development, accelerate its growth rates and further increase the competitive economy. The infrastructure of the market of agricultural products and food must ensure the use in production of the achievements of scientific and technical progress, increasing the volume of production and sale of agricultural products.

The strategic goals of the development of the infrastructure of Ukrainian agro-food market should be:

- a comprehensive and systematic approach to managing the infrastructure of the agro-food market;
- optimization and stabilization of the food situation: achieving food independence; ensuring physical availability due to optimization of supply and consumption, equalization of supply and demand; improvement of product quality and market monitoring;
  - reduction of costs of food sector producers;
  - raising the level of education and awareness of employees of the food complex;
- statistical monitoring of trends in the agro-food market and elements of its infrastructure, information and consulting support for the work of market participants;
- improvement of the supply system of commodity producers in order to update their material and technical base;

- the organization of a competitive system of goods movement, which will allow to reduce the number of links in the chain from the producer to the consumer, will reduce circulation costs and consumer prices;
- logistics of the market of agricultural products, raw materials and food;
- increasing the competitiveness of products of the agro-food market.

Therefore, it is expedient to propose priority directions infrastructure improvement, based on the strategic goals of development of the agro-food market, the analysis of its trends and current trends.

The key strategic direction of the further development of the infrastructure of the agri-food market at the current step should be a set of measures to improve the management and strategic development of all its elements. The trends of food security, depending on a stable market infrastructure, will depend on how complex the relationship of spheres and industries will be in chain of promotion of agro-food products.

Table 1 presents the proposed mechanisms for improving the management of the formation of the food market infrastructure as a condition for guaranteeing food security, which includes a set of economic and managerial measures.

Table 1

Mechanisms for improving the management of the formation of the food market infrastructure as a condition for guaranteeing food security

Elements of the infrastructure of the agro-food market	Economic measures	Management measures
wholesale and retail trade in food and agricultural products	Develop mechanisms for implementing laws on wholesale food markets at the state and regional levels. Create a three-level system of markets (regional, city wholesale and retail and wholesale food markets) with proper trade conditions, compliance with safety and sanitation requirements.	Conclude an agreement on cooperation between regional executive bodies and representatives of trade networks on the sale of agricultural and food products. Form an interregional freight system, develop exchange, auction and electronic trade, create distribution centers.
warehousing and transport service for producers and consumers	To develop the investment opportunities of commodity producers due to the improvement of crediting and leasing conditions. Provide state support for infrastructural elements of supply, warehouse complex, transport service, in particular, suppliers of material and technical resources for agriculture and participants of the organized agricultural market, service cooperatives, etc.	Develop a strategy for the development of the logistics infrastructure of the agricultural and food sector and a system of indicators for assessing its effectiveness and monitoring. In the food security strategy and regional food security programs, include areas of support and stimulation of logistics infrastructure enterprises with the help of a set of measures for the development of the material and technical base of the warehouse and the creation of a transport and logistics system for the agro-food market
information provision of agro-	To organize an information and consultation system of governmental, private and	To organize the work of information and consulting services in the field of agrarian

<p>food market participants</p>	<p>cooperative services, points, working groups with various sources of funding, which should be part of the unified information space of the state. Create a marketing center for information and consulting services in the field of agrarian consulting, which has informational connections with marketing divisions of market infrastructure enterprises, agricultural and wholesale and retail enterprises. Establish cooperation of information and consulting services with suppliers of material and technical resources.</p>	<p>consulting with regard to their development of innovative educational programs and educational activities aimed at increasing the educational level of market infrastructure participants. Organize the work of information and consulting services in the field of agricultural consulting to improve the credit, insurance and leasing literacy of commodity producers. Information and consulting services to form a database of logistics service providers and provide services aimed at improving the knowledge of producers in the field of agricultural logistics.</p>
<p>credit and financial support of the agro-food market</p>	<p>Develop a set of measures aimed at enabling all business entities of the agro-food market to receive economically justified credit resources from most financial and credit organizations at competitive rates for the required term according to technological processes. To develop agricultural cooperation with the help of special lending programs for consumer and credit cooperatives with the participation of state and commercial banks.</p>	<p>Deepen the specialization of financial and credit institutions designed to serve the agricultural sector, expand the range of services provided by them, ensure the availability of financial resources for all business subjects of the agro-food market. Develop special microcredit programs that take into account the specifics of borrowers' activities in the agri-food market.</p>
<p>personnel training for the agro-food market</p>	<p>Restore the system of personal distribution to agricultural organizations of graduates of educational institutions, who graduated them at budget expense. To introduce new specialties and specializations in accordance with the directions of agricultural production reform, to improve the system of training and retraining of specialists, to expand the complex of educational and consulting services on an innovative basis in order to increase the prestige of agricultural education.</p>	<p>In the governmental target and regional programs for personnel support of the market infrastructure, include a set of strategic measures to improve the qualifications and organize the training of specialists working in the field of trade in agricultural products and food.</p>

*Source: developed by the author based on [2, 13]*

The conducted study of the current trends of the agro-food market allows us to conclude that today the legislation that determines the legal status of market infrastructure elements is imperfect and does not always meet the needs of its participants. Comprehensive analysis and development of measures to improve the management of the infrastructure of the agro-food market in order to ensure the food security of the state within the limits of the tasks assigned to it. For this, it is necessary to develop or update the legal framework for each of the subjects participating in the agricultural market.

### **Conclusions**

The role of the infrastructure of the agro-food market in ensuring food security is the support the economic and physical availability of food, which, in turn, requires the creation of conditions for the effective operation of agricultural and service enterprises and the harmonization of the interests of the participants in the system of guaranteeing food security; application of mechanisms and methods

of organizing a transparent market of agro-food products, effective use of production, financial, information and labor resources.

The agro-food market includes the stock market, wholesale and retail markets, auctions, branded stores of agricultural enterprises, exhibitions and fairs, etc. The service elements of the agro-food market infrastructure are: transport, warehousing, communication, price monitoring systems, standardization, certification, insurance, etc. Mechanisms for improving the management of the formation of the food market infrastructure as a condition for guaranteeing food security should be implemented at the levels of: wholesale and retail trade in food and agricultural products, warehousing and transport services for producers and consumers, information support for participants in the agro-food market, credit and financial support for the agro-food market, training of personnel for agro-food market, and provide a set of management and economic measures.

## References

1. Berezin O.V. Prodovolchyi rynek Ukrainy: teoretyko-metodolohichni zasady formuvannia i rozvytku: monohrafiia. – K.: Tsentri uchbovoi literatury, 2008. – 184 s.
2. Strashynska L.V. Stratehiia rozvytku prodovolchoho rynku v Ukraini: monohrafiia / za red. B.M. Danylyshyna. – K. : Profi, 2008. – 532 s.
3. Lozynska T.M. Natsionalnyi prodovolchyi rynek v umovakh hlobalizatsii: monohrafiia. – Kharkiv: Mahistr, 2007. – 272 s.
4. Sabluk P.I. Formuvannia ta funktsionuvannia rynku ahropromyslovoi produktsii: prakt. posib. – K: IAE UAAN, 2000. – 558 s.
5. Karpenko N.V. Hospodarski zviazky v infrastruktornomu kompleksi prodovolchoho rynku Ukrainy: monohrafiia. – Poltava: RVV PUSKU, 2004. – 122 s.
6. Karpenko A.M. Orhanizatsiino-ekonomichni zasady formuvannia rynkovoï infrastruktury prodovolchoho rynku Ukrainy / A. M. Karpenko // Innovatsiina ekonomika. – 2013. – № 11 (49). – S. 122-126.
7. Paska I.M. Rol i mistse optovykh rynkiv v systemi zbutu silskohospodarskoi produktsii / I.M. Paska // Naukovi pratsi Poltavskoi derzhavnoi ahrarnoi akademii. 2012. – № 2 [5]. – C. 210-217.

8. Kovalenko Yu.S. Ahrarnyi rynek Ukrainy: orhanizatsiia ta upravlinnia: monohrafiia. – K.: IAE UAAN, 1998. – 108 s.
9. Dudar T.H., Dudar V.T. Formuvannia rynku konkurentospromozhnoi ahroprodovolchoi produktsii: teoriia, metodyka, perspektyvy: monohrafiia. - Ternopil: Ekonomichna dumka, 2009. - 246 s.
10. Kavetskyi I.I. Metodychni zasady suspilno - heohrafichnoho doslidzhennia svitovykh ahroprodovolchykh rynkiv / I.I. Kavetskyi // Ukrainyskyi heohrafichnyi zhurnal. - 1999. - № 1. - S. 27-31.
11. Bilyk Yu.D. Stanovlennia i rozvytok suchasnoho prodovolchoho rynku v Ukraini / Yu.D. Bilyk // Formuvannia ta rozvytok ahrarnoho rynku: zb. nauk. prats. - K.: NNTs "Instytut ahrarnoi ekonomiky", 2004. – S. 177-189.
12. Balabanov H.V. Terrytoryalnaia sehmentatsiia prodovolstvennoho rynku Ukrainy. Zernoproduktovyi kompleks Ukrainy: struktura y terrytoryalnaia orhanyzatsiia. - K.: yARR/PAP, 1999. - 105 s.
13. Batyhina O.M. Orhanizatsiino-pravovi pytannia optovoho rynku silskohospodarskoi produktsii v Ukraini: avtoref. dys. ... kand. yuryd. nauk : spets. 12.00.06. – Kharkiv, 2007. – 21 c.
14. Pankova L.O. Pravove rehuliuвання diialnosti ahrarnykh birzh v Ukraini: avtoref. dys. ... kand. yuryd. nauk: spets. 12.00.06. – K., 2005. – 19 c.
15. Sait Derzhavnoi sluzhby statystyky Ukrainy. URL: <http://www.ukrstat.gov.ua>
16. Ahrarne pravo Ukrainy: pidruch. / V.M. Yermolenko, O.V. Hafurova, M.V. Hrebenuk [ta in.]; za zah. red. V.M. Yermolenka. – K.: Yurinkom Inter, 2010. – 608 s.