

# Infrastructure of the regional agrifood market: peculiarities of functioning and methods of improvement

## Infraestructura del mercado agroalimentario regional: peculiaridades de funcionamiento y métodos de mejora

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#### ABSTRACT:

This article is devoted to examination of the peculiarities of functioning of the market infrastructure in the Krasnodar region. The urgency of the topic of the article is explained by the fact that the institutions regulating the operation of the subjects of the agrifood market are so far underdeveloped, while the state of the market infrastructure does not secure proper functioning of the agrifood market in the region. Due to this, study of the key problems of development of the agrifood market infrastructure of the Krasnodar region and justification of priority area of its improvement are the main purposes of the presentation of materials of the article. The study was carried out on the basis of the use of general scientific and special methods, including monographic, abstract-logical, economic-statistical, analytical, comparative and dialectical methods, which allowed to study the regional agrifood market as a complex manifold system. Developments on improving the market infrastructure of agrifood markets are a significant addition to the scientific support of functioning processes of industries and

#### RESUMEN:

Este artículo se dedica a examinar las peculiaridades del funcionamiento de la infraestructura de mercado en la región de Krasnodar. La urgencia del tema del artículo se explica por el hecho de que las instituciones que regulan el funcionamiento de los sujetos del mercado agroalimentario están hasta ahora subdesarrolladas, mientras que el estado de la infraestructura de mercado no asegura el buen funcionamiento del mercado agroalimentario en la región. Debido a esto, el estudio de los principales problemas de desarrollo de la infraestructura del mercado agroalimentario de la región de Krasnodar y la justificación del área prioritaria de su mejora son los principales propósitos de la presentación de los materiales del artículo. El estudio se realizó sobre la base del uso de métodos científicos generales y especiales, incluyendo métodos monográficos, abstractos-lógicos, económicos-estadísticos, analíticos, comparativos y dialécticos, que permitieron estudiar el mercado agroalimentario regional como un complejo sistema múltiple. Los avances en la mejora de la infraestructura de mercado

sectors of the agrarian economy of the region.

**Key words:** agroindustrial complex, agrifood market, market infrastructure, region, agricultural products.

de los mercados agroalimentarios son una adición significativa al apoyo científico de los procesos de funcionamiento de industrias y sectores de la economía agraria de la región.

**Palabras clave:** complejo agroindustrial, mercado agroalimentario, infraestructura de mercado, región, productos agropecuarios.

## 1. Introduction

Study of the agrifood market at every historical stage of development is an important process focused on the vitality of an individual, a region, a state, and a society in general. The problem of provision of food to the population is a vital strategic task for any country, which has become acute in the period of reforms in Russia (Altukhov, Drokin and Zhuravlyov, 2016; Belkina 2015).

Sustainable agriculture is able to provide the two most important categories: food safety and food security.

Food security is a state in which the risk of getting ill from food consumption is within the acceptable range. This is achieved through the public policy, the system of rules and standards, technical studies, projects and technologies, surveillance and control, current measures to reduce the risks and dangers in the food supply chain (Knechtges 2012). Food security should be recognized as a basic human right (Hulse 1995). The existing barriers to sustainable agriculture development include: low level of education and infrastructure development, no loans and insurance markets (Dethier, and Effenberger, 2012; Dudin, Sekerin, Smirnova, Frolova and Sepiashvili, 2014). Infrastructure support of the agrifood market plays an important role in its functioning.

According to the theoretical and practical studies, the regional market infrastructure has a distinct geographical nature of functioning, because its member organizations are located within the same region and serve the economic entities and the population of a particular territory (Belkina, 2015). Since the prevailing share of the elements of market infrastructure has a regional significance, it is advisable to analyze it as a system of a regional scale. Taking into consideration the possibility of the existence of the market infrastructure of the local level (city, district), it is obvious that it has a fragmented nature and hence will be part of the regional market infrastructure, so its local elements should be regarded as its territorial units.

Regional market infrastructure is a manifold and relatively isolated system, at the same time being a subsystem of the systems of the higher order. As such, on the one hand, it appears a part of a nationwide market infrastructure, and on the other hand – a part of the regional economy.

At the same time, the regional market infrastructure has a geographical loop and is described by certain integrity, due to which it definitely can be studied independently. The market infrastructure started shaping along with the market reforms of the domestic economy. Activation of the processes of consolidation and corporatization on the Russian agrifood market went in 2002-2006. Then the changes of a completely different level followed. They are described by intensification of competition both among goods producers and trade organizations and among organizations ensuring the market functioning. To strengthen their positions, economic agents create alliances and associations which have an innovative physical infrastructure. Trade enterprises are consolidated through establishment of trade networks throughout the country. A qualitatively new and promising development of the agrifood market today is the formation of chain trade alliances, agricultural fairs, as well as emergence and development of tenders (Gorlov, and Gorlova, 2014)

In this context, functioning of the market infrastructure constantly faces new demands. It is important to address a specific aspect of activity related to the peculiarities of the economic and legal status of domestic organizations. It is as follows: institutions regulating the activities of

the agrifood market entities are underdeveloped; most of the heads of entrepreneurial structures focus on achieving short-term rather than strategic goals; state of the agrifood market infrastructure does not secure its proper functioning; resolution of disputes between economic subjects more and more often occurs with the use of illegal practices and corrupt methods or involves an administrative factor; organizations as economic actors sometimes do not have sufficient institutional – in particular, legal – means to protect and preserve their independence (Vasilyeva, and Petrova, 2011).

In accordance with the above mentioned negative phenomena, the regional market infrastructure carries out certain functions of provision of legal advice and legal protection to the agrarian market players. Law firms, legal offices and security agencies provide economic entities with necessary services in the legal field. However, the network of consulting units and community committees existing at the local chambers of commerce do not provide local agricultural producers with direct access to markets. As such, the market infrastructure does not promote the protection of goods producers and conduct of the civilized business.

It is obvious that for objective reasons, the regional market infrastructure needs improvement in accordance with market requirements and social transformation. Development of the market infrastructure is a multifaceted process of combining traditional and innovative structural elements. Modernization should be carried out on the basis of updating the elements of infrastructure in the compliance with modern requirements, which implies various improvements and adaptation to changes in the business environment. Such modernization results in transformation in all elements and links of infrastructure, which further leads to its radical transformation (Chepeleva, 2012; Gaiduk and Bagmut, 2015).

As such, all the components of the regional market infrastructure (informative-communicational, structural and functional subsystems) and their elements undergo qualitative changes that positively influence the services provided and, as a consequence, the market activity of the regional economic entities. In this case, an important condition is advance of the market infrastructure upgrade and the pace of economic development, in any case, not lagging behind.

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## **2. Methods.**

Academic works of scientists in the field of creation and functioning of the market infrastructure and its modernization transformations served as a theoretical basis for the preparation of this article. Particular attention is paid to developments where various aspects of the development of agrifood markets and market infrastructure at the regional level are reviewed in a systematic and flexible manner. The methodological foundation of the study is based on the use of general scientific and special methods, including dialectical, monographic, analytical, abstract-logical, comparative and economic-statistical ones.

The analytical method of research is used in the study of agrarian production and operating conditions of the agrifood market infrastructure. The use of the abstract-logical method allowed to disregard the insignificant parts of the object under study and to focus on the processes of formation and development of the market infrastructure based on logical reasoning. The comparative method allowed to reveal the drawbacks of organizational and economic mechanism of functioning of the agrifood market infrastructure and to develop recommendations for the creation of product-commercial option of the self-regulatory organization. The use of the monographic method promoted the in-depth study of the agrifood market and its infrastructure, identification of trends and patterns of its development.

The economic-statistical method was used to study the production factors and the combination of agricultural producers. The processes of qualitative development of the agrifood market and its infrastructure were studied through the dialectical method. Theoretical and methodological analysis allowed to consider the regional agrifood market of the Krasnodar region as a complex manifold system that requires modernization transformations aimed at developing new tools of

interaction between the market participants and the infrastructure. The key problems of the development of the agrifood market infrastructure and methods of its improvement were identified on the basis of the results obtained.

## 3. Results

### 3.1. Assessment of food production and consumption in the Krasnodar region

Agroindustrial complex of the Krasnodar region is one of major food producers in the Russian Federation. Its condition plays a key role in provision of the population with food supply.

Agriculture is the core element of agroindustrial complex of the Krasnodar region. The share of agricultural enterprises in the total volume of agricultural production has been increasing and amounted to 62.3% in 2015. A drop in the share of private households from 28.6 to 19.3% was observed during the period under study. Peasant farms and individual entrepreneurs have increased their contribution to agricultural production, their share amounts to 18.3% (Table 1).

**Table 1 – Agricultural production in the Krasnodar region, mln rub**

<b>Name</b>	<b>2010</b>	<b>2014</b>	<b>2015</b>	<b>2015 in % to 2010</b>
All categories of households	201,554	286,518	365,753	181.5
of which crop production	128,886	206,336	275,765	213.9
animal production	72,668	80,183	89,988	123.8
Agricultural organizations	118,756	173,202	227,751	191.8
of which crop production	85,132	127,372	175,545	206.2
animal production	33,624	45,830	52,207	155.3
Private households	57,763	66,185	70,785	122.5
of which crop production	20,357	34,598	36,052	177.1
animal production	37,406	31,587	34,733	92.8
Peasant (farmer) households	25,035	47,132	67,217	268.5
of which crop production	23,397	44,366	64,168	274.3
animal production	1,638	2,766	3,049	186.1

Over the past five years, growth of proceeds from sale of agricultural products in cash has

amounted to 81.5%. Livestock production in private households has significantly decreased.

The agrifood market is described by a set of product groups being sold, which make up the basis of the food market. It combines the market of agricultural raw materials and finished products. The market structure is defined by effective demand of the population for food from various price categories (Dudin, Sekerin, Smirnova, Frolova and Sepiashvili, 2014). The volume of demand is defined by aggregate demand, which depends on income levels and dynamics of prices for raw materials and food. During the period from 2012 to 2014, per capita cash income of population of the Krasnodar region grew by 32.6%.

Exceed of the average per capita income over the average monthly nominal gross wage of workers results from the payment of social benefits.

The level of income sets a certain level of food consumption, the rational norms of which are defined by the Order of the Ministry of Health and Social Development of the Russian Federation. According to the conducted analysis, the consumption of meat and meat products by the population of the Krasnodar region has increased and equaled to 87 kg per capita by 2014, which exceeded the physiological norm by 16%. However, the consumption of milk and dairy products, eggs, potatoes, fruit and vegetables remains below the recommended standards.

In general, the analysis of the dynamics of consumption allows to note the trend of its relatively low growth over recent years; products from other regions and from abroad enter the food market of the Krasnodar region.

The turnover of retail trade in food products is one of the core indicators of functioning of the Krasnodar region's market. Over the years, the turnover of retail trade has been growing steadily. Volume of sales in current sale prices amounted to 482,373 mln rub., which is 61.5% more than in 2012. The turnover of food products per capita increased by 55% and amounted to 88.5 thous. rub. per capita in the region. Share of food in the structure of retail trade accounted for 45% in 2014, which describes high growth rates.

### 3.2. Characteristics of the agrifood market infrastructure

78 markets were operating in the Krasnodar region in 2014, of which 24 were agricultural. There is a trend of decline in the number of markets by 50%, while their number in the specialized agricultural sector increased. The number of trading spaces in these markets increased by 57% in 2014. 1,529 fairs operate on the territory of the region, which is 324 more than in 2012. The number of food fairs grew up to 25%, while the number of trading spaces has reached 21.8 thous. (Table 2).

Some markets were dismantled or turned into fairs, while others have transformed into supermarkets, shopping malls and other retail formats. All the agricultural markets and food fairs should be located in fixed premises.

**Table 2** – Markets and retail fairs in the Krasnodar region

Indicator	2012	2013	2014	2014 in % to 2012
Number of markets	155	97	78	50.3
of which agricultural	20	22	24	120.0
Number of trading spaces in the markets -	51,899	31,130	27,452	52.9

total				
of which agricultural	5,402	10,049	8,502	157.4
Number of fairs	1,205	1,342	1,529	126.9
of which food	492	539	616	125.2
Number of trading spaces in the fairs - total	122,013	121,227	112,744	92.4
of which food	17,831	18,326	21,837	122.5

Goods warehouses ensure stable operation of the market. Their number in 2014 was 1,460, which is 37 less than in 2012. Decline in the number of storage organizations is associated with decline in the number of markets, hence structural proportions of sale and service organizations are maintained in the economy of the region. Decline in the number of markets and trading spaces in the market infrastructure of the Krasnodar region does not indicate the exit of entrepreneurs, individuals and organizations from the market. They have located their business in large shopping malls, which indicates the implementation of structural modernization of the warehouse and service facilities.

Subsystems of the market infrastructure of agrifood market in the Krasnodar region are procuring, financial, warehouse, information and commercial infrastructures:

- Procuring infrastructure implies organizations engaged in procurement of agricultural products, intermediary procurement and purchasing organizations.
- Financial infrastructure comprises commercial banks, non-bank financial institutions and factoring firms.
- Information infrastructure comprises telecommunications networks and centers of commercial services.
- Infrastructure of commercial activities includes business centers, advertising agencies, marketing and consulting firms.

Regional infrastructures are differentiated by serving the markets into the following types: universal market infrastructure, infrastructure serving various types of markets (consulting information centers, insurance companies, etc.) and specialized infrastructure serving individual segments of the market (market of means of production, agrifood, financial market, real estate market, etc.).

Such classification enables to obtain information about the nature of serving the regional agrifood market. It seems necessary to assess the market infrastructure, which serves agricultural producers, population and trade organizations. Sectoral classification of the regional market infrastructure is widespread in statistical practice. The statistical register of business entities and organizations of all forms of ownership and management comprising the market infrastructure accounted for 109.1 thous. units as of the end of 2014. The greatest number of business entities is concentrated in trade – 36.6 thous. organizations. Analysis of infrastructure of the agrifood market of the Krasnodar region allowed to identify the following problems:

- high barriers to the market for local producers;
- lack of government regulation;
- uneven development of infrastructure;
- poor interaction between public authorities and local government in the regulation of market

- processes;
  - availability of inequalities in the distribution of market infrastructure, unevenness and imbalance of its development in each municipality.
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## **4. Discussion**

### **4.1. Justification of the need for modernization reforms in the market infrastructure**

Systemic modernization of the market infrastructure is aimed at a radical transformation of the mechanism of interaction between market participants and elements of the market infrastructure. The algorithm of system modernization implies the elimination of the complex of organizational and economic contradictions between the structure of agricultural production, distribution, exchange and consumption.

The main disadvantages of the current mechanism of functioning of agrifood markets are the following:

- lack of systematic requirements for procedures of entry to the market for new participants, as well as principles of its functioning in terms of consumer focus and pricing;
- unipersonal nature of developing administrative decisions in terms of functioning and development of the agrifood markets;
- low level of protection of consumers from substandard products, as well as disruptions in supply, given seasonal factor and factor of remoteness of external suppliers;
- insufficient efficiency of the measures of agricultural protectionism of local authorities in relation to domestic agricultural producers;
- insufficient coordination of activities of market participants for the purpose of prevention of disruptions in food supply;
- low level of accounting for the nature of food security of the territories, standards of food consumption and their balance (Belkina, 2015)

### **4.2. Improvement of production and technological infrastructure of the market**

Improvement of production and technological infrastructure of the agricultural sector is a mechanism to reach the maximal volume of agricultural production corresponding to the established level of resource provision, as well as ensuring optimal use of material, technical, financial and human resources.

Import substitution strategy is a gradual transition to production, storage and sale of food products using high-tech equipment and innovative resource-saving technology (Maslov, Tkachenko, Yudina, Kadyrov and Kalitko, 2015; Trubilin, Gayduk and Kondrashova, 2015).

Significant size of the required investment in technological modernization, high price and riskiness of borrowed capital, as well as shortage of own financial resources require a serious economic evaluation of the priority areas and assessment of efficiency of investments in the development of facilities of infrastructure provision of agrifood markets (Gaiduk, and Bagmut, 2015).

Sequence of stages to determine the level of development of production and technological infrastructure of the agrifood market in the region with an emphasis on scientific and technological component was suggested based on the analysis of Russian and international experience (Tsenina, Danko, Ekimova, Sekerin and Gorokhova, 2016).

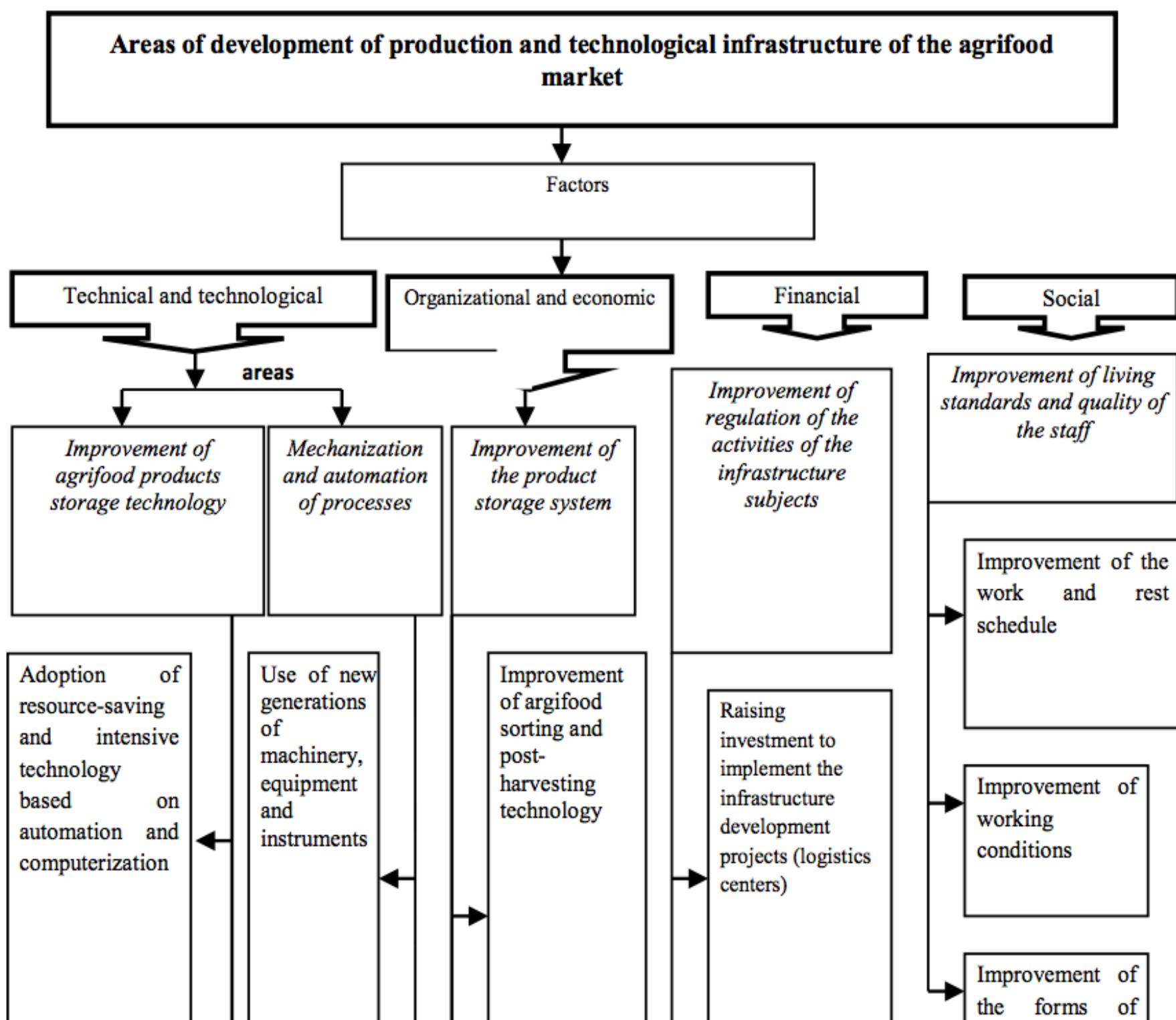
The first step involves an analysis of whether the production and technological infrastructure of agrifood markets in the region is developing. The second stage involves the analysis of

implementation of systematic action of the regional administration in the field of development of infrastructure objects of the agrifood market, clarification of access to the material, technical, financial and human resources, as well as monitoring of obtained indicators (Trubilin, Gayduk and Bagmut, 2015; Bereznev, and Kudrevatykh, 2011).

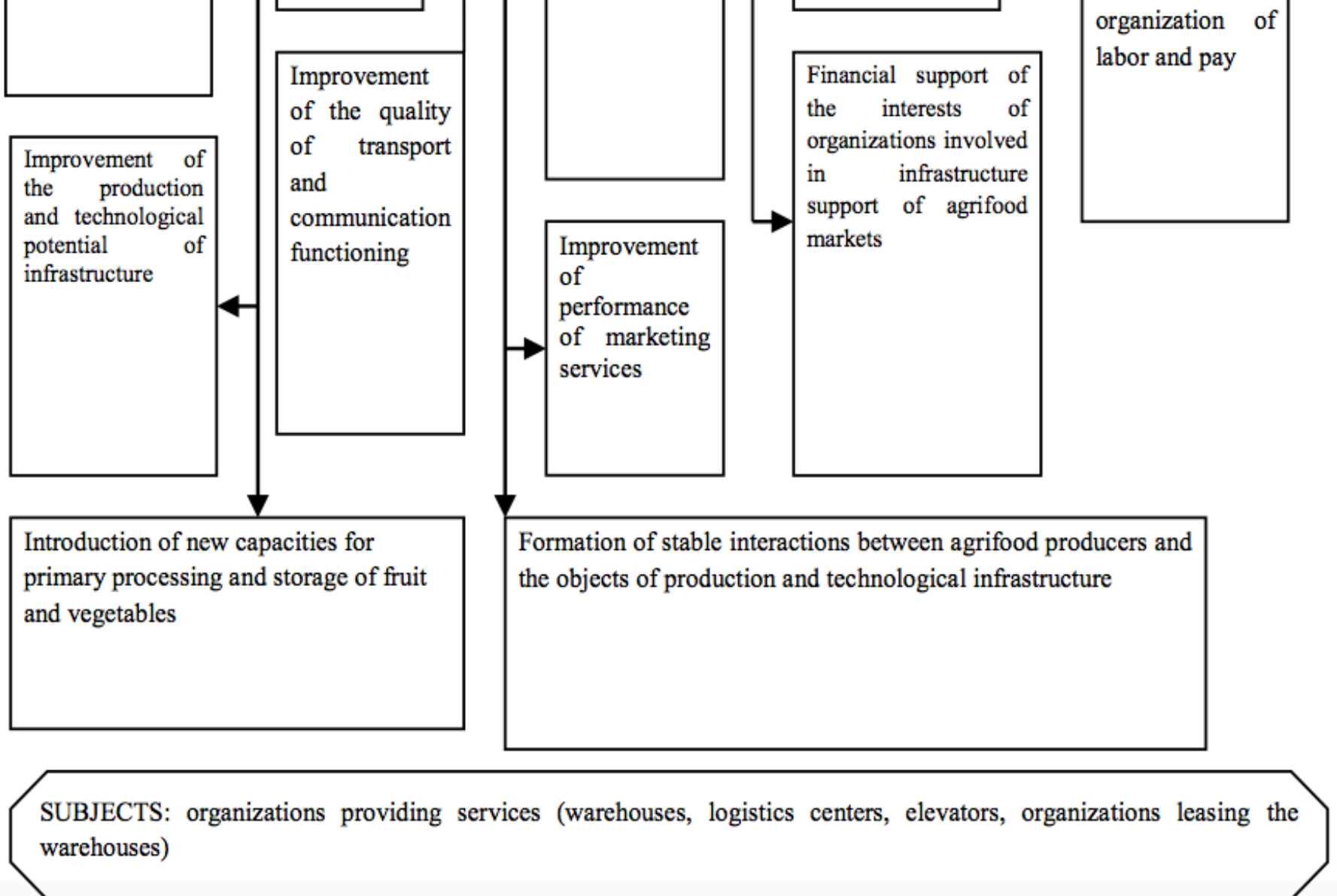
It has been established that it is appropriate to increase the volume of regional agricultural production in the framework of technical and technological modernization of the infrastructure objects of the agrifood market. Despite the existing demand for high-quality storage area and logistics facilities that meet modern technical and technological standards, a decline is observed in the proposals for storage of agricultural products in the Krasnodar region.

A significant part of the used storage space is areas that are poorly adapted for the arrangement of high-quality storage of vegetables and fruit, according to the modern technical and technological standards. Rates for storage and post-harvesting of agricultural products in most warehouses are so high that it is not feasible for producers to use the services of third-party organizations in the long term. Households prefer to store a significant part of their products in their own warehouses, subjecting them to a high risk of quality loss.

The conducted analysis revealed that the improvement of infrastructure provision of the subjects of the agrifood market and the maximal return are possible in result of the more active introduction of innovative technology for storage of agrifood products in particular, as well as modernization of existing structures (Figure 1).







**Figure 1** – Factors and areas of development of production and technological infrastructure of the agrifood market

It is important to focus on the priorities able to improve the quality of agrifood products storage, contribute to reduction of unit costs and provide a quick return on invested resources in a relatively short period of time.

Significant size of investment in the development of the system of the regional infrastructure support requires scientific justification of their efficiency and profitability. In this case, it is important not just to simply evaluate the economic impact, but also to determine the size of storage areas that would allow to efficiently process the incoming regional flows of agrifood products and arrange the outgoing flows in the optimal way.

## 5. Conclusions

The theoretical analysis of the economic literature on the problem of functioning of infrastructure of the agrifood markets allows to draw the following conclusions. The regional market infrastructure is a set of institutions, organizations, establishments and services ensuring the functioning of the agrifood market with the purpose of meeting the needs of its participants in services supporting the distribution process.

Examination of the process of development of the market infrastructure in terms of the peculiarities of its functioning allows to state: intensification of competition among trading organizations and subjects ensuring the market functioning, uneven development of infrastructure across the territory of the Krasnodar region, insufficient financial support of agricultural entities. Trade organizations are consolidated through the creation of retail chains across the entire territory of Russia. Creation of chain trade alliances, associations, stationary market facilities and fairs has been a new and promising area of development of the commodity market in recent years.

Assessment of the development of the markets in the Krasnodar region allows to note that the retail trade is one of the fastest growing elements of the regional economy. The region has ranked first in the Southern Federal District by the volume of the retail trade turnover in recent years, which tends to increase, including per capita.

Physical and economic availability of food in the Krasnodar region is influenced by such factors as purchasing power of the population, development of consumer lending, availability or lack of the established retail chains and large shopping malls, degree of availability of large settlements with a wide range of food products, organization and quality of road transportation.

As such, summarizing the results of this study, it must be noted that the efforts on the improvement of the market infrastructure of the agrifood markets are an essential complement to the scientific support of the processes of functioning of industries and sectors of the agrarian economy of the region, because it is not exclusive of the law on the regulation of agrifood markets, the existing concepts and strategies of ensuring the food security of the territories.

The implementation of regional investment projects aimed at increasing the production volumes, output of new products and provision of jobs will allow to ensure a stable growth of production and tax revenues to the regional budget (in the relevant proportions) and to accumulate funds for the improvement of the living standards, reduction of the investment risks and enhancement of the innovation potential.

The market infrastructure can be modernized in two stages:

- Stage 1 involves preparation to the transformation of the market infrastructure in accordance with the market requirements (2-3 years). At this stage, the compulsory procedures include the development of the system of technical update of the material base.

- Stage 2 lasts for 4-5 years and must include the process of renovation of fixed assets through the creation of facilities for the goods storage. A peculiarity of this stage is the need to stimulate demand of investors for the modernized market facilities.

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