

DOI: [10.55643/fcaptive.4.45.2022.3825](https://doi.org/10.55643/fcaptive.4.45.2022.3825)
Maryna Ponomarova

PhD in Economics, Associate Professor,
 State Biotechnological University,
 Kharkiv, Ukraine;
 e-mail: univerms@ukr.net
 ORCID: [0000-0001-8463-821X](https://orcid.org/0000-0001-8463-821X)
 (Corresponding author)

Oleksand Yeysiukov

PhD in Pedagogical Sciences, Associate
 Professor, State Biotechnological
 University, Kharkiv, Ukraine;
 ORCID: [0000-0002-3554-8848](https://orcid.org/0000-0002-3554-8848)

Lyudmila Shovkun

PhD in Economics, Associate Professor,
 State Biotechnological University,
 Kharkiv, Ukraine;
 ORCID: [0000-0001-8148-2336](https://orcid.org/0000-0001-8148-2336)

Svitlana Zolotarova

PhD in Agricultural Sciences, State
 Biotechnological University, Kharkiv,
 Ukraine;
 ORCID: [0000-0001-7275-5603](https://orcid.org/0000-0001-7275-5603)

Iлона Kramarenko

Postgraduate Student, State
 Biotechnological University, Kharkiv,
 Ukraine;
 ORCID: [0000-0001-5343-9859](https://orcid.org/0000-0001-5343-9859)

Received: 23/07/2022

Accepted: 08/08/2022

Published: 31/08/2022

© Copyright
 2022 by the author(s)



This is an Open Access article
 distributed under the terms of the
[Creative Commons CC-BY 4.0](https://creativecommons.org/licenses/by/4.0/)

FORMATION AND MANAGEMENT OF THE DEVELOPMENT OF AGRICULTURAL PRODUCTION AND PROCESSING OF AGRICULTURAL PRODUCTS AND THE VALUE OF FOOD TECHNOLOGIES

ABSTRACT

The purpose of the study is to analyze the state of the processing sector; determine management tasks that will contribute to increasing the share of processing in the total volume of agricultural products and to substantiation of management measures regarding the value of food technologies. Strategic tasks the solution of which helps to increase the share of processed products were identified and studied. It is indicated that the promotion of investments, primarily in the processing industry and related fields of activity, is one of the main areas of activity of managers of all levels of the agrarian industry. Priority institutional directions for promoting the increase of investment flows are outlined. This will ensure a high level of technology, reduce the volume of processing waste, increase the added value of agrarian products, provide income to the budget of the country and regions, and create prerequisites for a synergistic impact on the development of the country's economy. It is proved that the share of individual farms in the volume of processing is significant, which indicates the need for management actions to increase this share. It is revealed that the "residues and waste of the food industry" still make up a large share of the agrarian export structure, which indicates the insufficient depth of raw material processing, the use of outdated technologies, and the need for management measures to correct this. It is pointed out that the efficiency of management of processing enterprises, in particular with regard to access to foreign markets, forms the prerequisites for their sustainable development. For the first time, it is indicated that preserving the value of food technologies requires the introduction of modern technologies in the processing sector, which demands: the use of state-level management measures to promote the formation of scientific structures in this direction; increasing the role of intellectual property institute; and new directions of investment and new skills from management are required.

Keywords: development management, agricultural production, processing of agricultural products, value of food technologies

JEL Classification: M11, O00, Q19

INTRODUCTION

The agrarian industry of Ukraine supplies food not only to the domestic market but, as shown by the blockade of Ukrainian ports and the subsequent reaction of the world community, it is an integral component of the global food market. Without Ukrainian food, not only a lack of food but also famine in various countries of the world was predicted. This indicates the importance of agricultural production to the country's economy. At the same time, in order to increase revenues to the country's budget, first of all, revenues from the export of products with high added value, to ensure the appropriate level of income of the rural population involved in agricultural production, which makes up more than a third of the country's population, it is necessary to increase the share of processing in the total volume of commercial agricultural products. This, in turn, requires improving the management of the development of agricultural production and processing of agricultural products, ensuring the appropriate level of value of food

technologies. During the period before the active phase of military operations, there was an increase in the weight of the agricultural sector in the country's economy, which was ensured by the increase in the share of agricultural and food products in the structure of the country's exports. Acquiring sustainability of this process requires an appropriate level of industry management at all levels.

Under the conditions of growing competition among Ukrainian processors of agricultural raw materials, the use of technologies that ensure the preservation of the value of food products is one of the main directions of product nomenclature formation. Preserving the value of food products allows to significantly increase sales and is a certain guarantee of the formation of a stable nature of these sales for a certain period in the future, that is, to ensure the sustainable development of own production.

LITERATURE REVIEW

A significant corpus of scientific works is dedicated to the study of various approaches to improving the management of the development of agricultural production and processing of agricultural products and to the study of approaches to ensuring the value of food technologies.

The agricultural sector is extremely sensitive to external and internal risks. It is characterized by groups of risks that do not affect other sectors of the national economy, such as weather risks, for example. Therefore, managers of the industry in general, and agricultural enterprises in particular, are subject to special requirements regarding their knowledge, experience, and leadership qualities. This especially applies to the management of Ukrainian agricultural enterprises. This is indicated in many scientific works on the issues of formation and management of the development of agricultural production in Ukraine, in particular, in the article by Malysh [1].

This is not a purely Ukrainian problem. The problem of ensuring the proper level of agricultural production management is indicated by researchers from various regions of the planet: Bjornlund et al [2] - sub-Saharan Africa, Vilas-Boas, et al [3] - Brazilia, Klerkx, et al [4] - Australia, TerAvest et al [5] - Malawi, Kassem et al [6] - Dakahlia and their experience is valuable to us. On the other hand, the analysis of the global food value chain strategy conducted by Horita [7] indicates the need to take into account the strategy of the global market when forming the management strategy of the enterprise. Bilan et al. [8] and Stephens [9] also point out the need to consider global food security in the development of agrarian systems, and Yi et al [10] draws attention to the study of value-added chains "after the farm".

The problems of forming and managing the development of agricultural production and processing of agricultural products, and preserving the value of food technologies were studied by foreign scientists: Cláudia et al [11], Nicholson et al [12], Abrahám et al [13], Anderson et al [14], Pigforda et al [15], Golian et al [16] and domestic scientists: Golian et al [16], Shchurevych [17] and others.

Supply chains of agricultural products from Ukraine to other foreign countries are widely covered by a team of authors under the leadership of Yatsenko et al [18-21]. They stated that the implementation of agreements on the efficiency of agricultural product supplies directly depends on the ratification of agreements between countries, which we agree with.

As the analysis showed, many researchers, both foreign: Chen et al [22], de Boon et al [23], and domestic - Rudenko [24] consider it necessary to introduce the latest information technologies in agricultural production as a guarantee of management efficiency and the acquisition of new quality of processing of agricultural products. At the same time, the priority directions for the implementation of management measures for the development of agricultural production and the processing sector, in particular with regard to ensuring the appropriate level of value of food technologies, remain insufficiently researched.

AIMS AND OBJECTIVES

Characteristics of the current state of the processing sector; strategic tasks, the solution of which contributes to the increase of the share of processed products in the total amount of marketable agricultural products; priority directions of managerial actions of management at all levels of the agrarian industry need identification and research. The directions of management actions for the formation of the appropriate level of value of food technologies should also be evaluated.

The purpose of the study is to analyze the state of the processing sector; determination of management tasks that will contribute to increasing the share of processing in the total volume of agricultural products and directions of management measures to ensure the appropriate level of value of food technologies.

METHODS

In this article, general and special methods of cognition were used. Thus, the method of analysis and synthesis was used to select the topic and purpose of the research; the method of content analysis was implemented for the study of works on this issue, the study of literary sources; the method of convergence from abstract to concrete is applied to analyze statistical data and propose necessary management measures based on this analysis; the method of induction and deduction was implemented to determine the primary institutional directions for promoting the increase of investment flows in the processing sector and related areas of agricultural activity; the method of idealization and formalization is applied to identify the main negative factors characteristic of the implementation of the tasks of managing the increase in investment income; the method of abstraction made it possible to identify and study strategic problems, the solution of which contributes to the increase in the share of processed products in the total amount of marketable agricultural products.

RESULTS

The conducted analysis established that increasing the share of processed products in the total volume of marketable agricultural products solves several strategic problems:

1. Allows to significantly reduce losses of agricultural products;
2. Ensures the appropriate level of the nutritional value of agricultural products;
3. Significantly increases the added value of agricultural products;
4. Creates new jobs in rural areas, and ensures the development of depressed areas;
5. Ensures the growth of revenues to the budgets of all levels - from district to state;
6. Increases the volume of export of agricultural products, creates new export prospects and facilitates access to new sales markets.

As experience has shown, the introduction of exclusively regulatory management mechanisms ultimately leads to a decrease in the efficiency of production activities. Therefore, reducing the regulatory pressure on the producer and forming a policy to stimulate production with the introduction of the appropriate level of financial and institutional support (benefits, preferences, government assistance in entering promising markets, etc.) can ensure the appropriate pace of development of processing capacities. From the point of view of the state management of the industry, in order to increase the share of processing products in the total amount of agricultural production, it is necessary to introduce institutional mechanisms for attracting foreign investments to the economy of Ukraine and institutional tools for increasing the export capabilities of Ukrainian processors of agricultural raw materials. For example, this concerns the adjustment of fiscal mechanisms and instruments of taxation of enterprises processing agricultural products.

Despite the one-sidedness of the views of officials, scientists, and management of processing enterprises regarding the need for a significant increase in investment flows, the practical implementation of this task is a complex process, the involvement of which requires the solution of a complex of many problems in the aggregate of their various aspects. Many management tasks of organizational-legal, financial-economic, and other directions should be involved in order to form a proper synergistic effect in order to achieve a sustainable trend of increasing investment flows. For example, as the research has shown, before the period of large-scale hostilities, the following contributed to the increase in investments in the processing of agricultural products: positive trends ensured by appropriate management actions in related sectors of the economy; an increase in the volume of the gross domestic product; population income growth; ensuring the proper level of payment and settlement discipline, which, among other things, contributed to the increase in domestic demand for the products of the processing sector. And all this led to the improvement of the financial condition of processing enterprises without additional involvement of external investments.

This is just one of the examples of the positive regulatory influence on the efficiency of the processing sector and emphasizes the need to apply a purposeful state policy in managing the development of the agrarian industry. In particular, regulatory and by-laws in various segments of the legal field, aimed at the development of agricultural production, need coordinated changes. And this, in turn, requires the coordinated activity of various institutional structures. So far, the implementation of management tasks of increasing investment flows in the processing sector of the agrarian industry is characterized by: a lack of integrity, simultaneity, coherence in certain areas, and inconsistency of fiscal policy.

Table 1. Indices of capital investments, as a percentage of the corresponding period of the previous year. (Source: based on State Statistics Service of Ukraine)

By types of economic activity	Years						
	2015	2016	2017	2018	2019	2020	2021
Agriculture, forestry and fisheries	127.1	149.5	130.7	108.5	90.0	56.6	119.3
In general in the country	98.3	118.0	122.1	116.4	115.5	64.6	113.0

The results of the conducted research show that even with the existing level of institutional management measures to ensure the inflow of investments in agriculture in general and, first of all, in the processing of agricultural raw materials, investment in the industry in certain periods was at a pace that was greater than the pace of investment in the country as a whole (see Table 1). The decrease in the rate of investment in agriculture occurred simultaneously with the decrease in the rate of investment in the country's economy. This indicates, on the one hand, the general reasons for the decrease in investment in the agricultural industry and the country's economy, on the other hand, the need for such regulatory management of the industry that would ensure sustainable investment growth.

The conducted analysis proved that, with the streamlining of the fiscal policy, the processing and food sector of economic activity is the most attractive component of the Ukrainian agro-industrial complex for investment income. The specified direction, with the introduction of modern technological complexes, is able to rapidly increase the volume of production of the range of goods with high added value. The results of the conducted research indicate that appropriate measures for the implementation of regulatory policy can lead to a reorientation of the agricultural sector from the production of mainly raw products to the production of ready-made food products, which will increase revenues to the budgets of all levels and strengthen the country's economy.

In general, the proper level of institutional support for investment in the processing of agricultural raw materials is able to form a synergistic effect on the development of the country's economy. We have identified the following areas as the primary institutional directions for promoting the increase of investment flows: coordination of the legal sphere according to the specified task; formation of common political will of all institutional structures; stabilization of financial and credit activities; increasing the level of protection of foreign and domestic investments, including small investments; increase on a competitive basis the share of domestic investors in the total volume of investment.

Traditionally, before and after the Soviet period, individual persons-entrepreneurs accounted for a significant share of the volume of production and supply of agricultural products. Consumers preferred them because they believed that individual agricultural enterprises provide higher quality products. Therefore, an example of the implementation of not regulatory, but institutional support for the agricultural producer is, in particular, the Law of Ukraine "On individual Farming" [25].

Table 2. The share of products (by types) produced by individual entrepreneurs, in national production. (Source: own calculations based on the data of the State Statistics Service of Ukraine)

№	Product name	Production share, %
1	Meat of own production, including category I offal	7.40
2	Meat products (sausage products, pates, smoked meats, canned meat, semi-finished meat products, minced meat, etc.)	22.83
3	Fish products (frozen, dried, salted or pickled fish, smoked fish, fish meal, canned fish and fish sticks, caviar, ready-made fish products, etc.)	59.10
4	Vegetable and fruit products (quick-frozen potato products; chips; fruit and vegetable juices, nectars; vegetables, mushrooms, frozen, canned, dried fruits, etc.)	9.10
5	Dairy products (including margarine and spreads)	3.85
6	Oil	3.23
7	Flour	3.70
8	Groats	28.10
9	Compound feed	1.57
10	Bakery products (ordinary bread by types: rye, wheat, etc.; dietary bread, lean bakery products)	5.30
11	Flour confectionery (cakes, pastries, products such as sweet rolls, crescent-shaped rolls, etc.)	14.85
12	Confectionery (chocolate and chocolate products, candies, gum, dragee, halva, oriental sweets, etc.)	18.75
13	Pasta products without filling (pasta, vermicelli, noodles, shaped products, elbows, etc.)	79.60
14	Mineral waters, ordinary natural waters and non-alcoholic drinks	27.27

This Law, among other things, formed the prerequisites for the development of the participation of individual and small farms in the processing of agricultural products. The introduction of the legal framework is a strong incentive for the manufacturer, but this is not enough. The conducted analysis showed that insufficient access to financial resources and a significant level of risk of activity in the sphere of agricultural production were the restraining factors of development. Luchehko [26] and Luchehko et al [27] articles point to the provision of the processing industry with financial resources - the main prerequisite for the modernization of the agricultural raw material processing industry as a priority area of investment activity in Ukraine.

The specified factors for individual and small farms have much greater weight than, for example, for agricultural holdings or even medium-sized agricultural enterprises. Of the total number of individual farms as of January 1, 2021 – 3921500, 2735300 of them were engaged in commercial agricultural production, including the number of leased farms – 367100. That is the activity of individual farms is present, but the influence of restraining factors is also felt. This determines the share of individual farms in the total amount of production of agricultural products, which could be even larger. The share of households in the total production of agricultural products is ~ 45%, and their participation in processing is significantly diversified by types of products (see Table 2). The analysis proved that the market of processed products deals with individual entrepreneurs in a niche way. By type of product, the market share belonging to individual entrepreneurs ranges from 3.7% (for flour) to 79.6% (for pasta without filling: macaroni, vermicelli, noodles, shaped products, elbows, etc.). The small share of individual entrepreneurs for some types of products is due to a decrease in the specific cost of products (per unit of weight) due to a significant increase in production volumes. These are, for example, processed products such as flour, oil, and compound feed. Therefore, according to these types, the products of low-capacity processing plants are not competitive in terms of price. For some types of products, the insignificant share of individual entrepreneurs in national production, for example, "meat of own production, including by-products of category I", is explained by the tendency of the specified category of producers to traditional methods of farming. For example, there are up to 15 pigs per worker on a pig farm in Ukraine, and on family farms in Western Europe, with the required level of production automation, there are a hundred pigs or more per worker.

According to the State Statistics Service, the export of processed products (according to reports - the position "Finished food products") before the active phase of military operations on the territory of Ukraine grew year by year. In particular, in 2021, it totalled 1079980.7 thousand dollars in monetary terms, which was 113.3% of the previous year's level. For comparison, in 2019, it amounted to USD 942493.2 thousand in monetary terms, which was 103.7% of the 2018 level. Unfortunately, the data analysis showed that in 2021, the lion's share of exports was "residues and waste of the food industry" - 43.8%. This indicates a low level of technologies for processing agricultural products and the need for significant investments in this industry to ensure the proper level of raw material processing. The implementation of management measures at the state level is able to give an impetus in the right direction to the segment of the processing industry of secondary vegetable and animal agrarian raw materials, in particular, in the spheres of production of biofuels and feed additives.

A significant share of losses and waste of raw materials during processing leads to two negative consequences: a decrease in the level of production efficiency and thus, a decrease in profit and an insufficient level of ensuring the value of food technologies [28]. This, in particular, is confirmed by the results of the study by Kotykova et al [29]. In the scientific work of these authors, the necessity of implementing measures to reduce losses and food waste in Ukraine is proved.

Table 3. The dynamics of production volumes of agricultural products by their types. (Source: own calculations based on the data of the State Statistics Service of Ukraine)

№	Product name by the Nomenclature of products of industry (the Nomenclature)	Unit	Years									
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	Fresh or chilled cuts of chicken	thsd.t	228	254	320	313	362	376	456	412	391	349
2	Sausages and similar products of meat, offal or blood and food preparations based thereon	thsd.t	286	288	287	260	229	233	247	248	237	236
3	Mixtures of fruit and vegetable juices	mln.l	315	295	272	235	189	187	187	184	189	172
4	Concentrated tomato puree and paste	thsd.t	74.3	69.1	56.1	80.2	94.2	92.1	113	112	108	126
5	Vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid	thsd.t	53.4	42.6	42.7	40.5	25.3	23.3	29.3	29.7	31.2	30.1
6	Jams, marmalades, fruit jellies, fruit or nut purees and pastes, being cooked preparations	thsd.t	59.4	65.0	65.6	58.2	46.1	49.8	44.4	63.2	57.1	51.9
7	Crude sunflower-seed oil and its fractions (excluding chemically modified)	mln.t	3.2	3.8	3.4	4.4	3.7	4.4	5.4	5.1	5.8	6.1

(continued on next page)

Table 3. (continued)

№	Product name by the Nomenclature of products of industry (the Nomenclature)	Unit	Years									
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
8	Margarine and reduced and low-fat spreads (excluding liquid margarine)	thsd.t	175	178	144	133	142	135	141	137	140	121
9	Milk and cream of a fat content by weight of > 1 % but ≤ 6 %, not concentrated nor containing added sugar or other sweetening matter, in immediate packings of a net content ≤ 2%	thsd.t	535	506	543	512	472	463	478	497	474	493
10	Skimmed milk powder (milk and cream in solid forms, of a fat content by weight of ≤ 1.5 %), in immediate packings of > 2.5 kg	thsd.t	38.2	45.1	37.1	52.4	51.2	48.5	47.6	38.1	34.5	35.3
11	Butter of a fat content by weight ≤ 85 %	thsd.t	76.2	88.1	93.9	113	101	102	108	105	91.6	87.5

The analysis of the dynamics of processing of agricultural products (see Table 3) indicates different, sometimes opposite, development trends for certain types of products, although in general, there is a trend towards the fixation of production volumes for certain types. In particular, "Sausages and similar products of meat, offal or blood and food preparations based thereon" (see Table 3) in 2015-2020 varies between 230-240 thousand tons; "Milk and cream of a fat content by weight of > 1% but ≤ 6%, not concentrated nor containing added sugar or other sweetening matter, in immediate packings of a net content ≤ 2% during the same period fluctuates within 260-290 thousand tons; "Crude sunflower-seed oil and its fractions (excluding chemically modified)" in the interval of 2015-2020 varies between 5.4-6.1 thousand tons. At the same time, "Mixtures of fruit and vegetable juices" shows a reduction in production volumes from 2020 to 2011 by 46%, and "Concentrated tomato puree and paste" shows an increase in production volumes from 2020 to 2011 by 69.6%.

According to our analysis, the reasons for the difference between the trend by position 4 Table 3 and positions 2, 3, 5 Table 3 are detected. "Chumak" ketchup (PJSC "Chumak") is well-known in Ukraine. The market leader "Chumak" surrendered its positions - before the stage of large-scale military operations, it accounted for only 25% of the ketchup market, and its main competitor, which, due to more effective management actions, captured a significant part of the market, "Torchin" (PJSC "Volynholding") makes up almost 2.5 times more. Created with foreign investment, using advanced technologies, intensively introducing innovations (for example, the introduction of PJSC "Volyn Holding" soft packaging "doy pak"), "Torchyn" products, which make up a significant share in the "Concentrated tomato puree and paste" position according to the business plans, were focused on the domestic market, as well as on export. Such an aggressive market management strategy of the mentioned enterprises, in contrast to the products in positions 2, 3, 5 (see Table 3), has borne fruit. The named companies in the market of mayonnaise products implement the same policy as in the market of ketchups. It should be noted that TM Shchedro, whose mayonnaise is produced at the Lviv and Zaporizhzhya fat plants, TM Royal Taste, and others began to create competition in the domestic and foreign markets. A significant number of processors of agrarian products contributes to the formation of a competitive market. And the appropriate place in this market is the result of proper management. The promotion of the preservation of nutritional value is one of the areas of activity of the management of the specified enterprises. In particular, these enterprises implemented strict control of the nutritional value of products regarding the content of sugar, salt, trans fatty acids, saturated fat, etc. Thus, the content of trans fatty acids in the products of PrJSC "Chumak", LLC "Nestle", LLC "Technocom" and LLC "Agrocsm" does not exceed 3% of the total fat content in the products of these companies, which corresponds to 1% of the daily calorie intake recommended by medical institutions.

The development of production, oriented to the domestic market, depends on the increase in the general level of income of Ukrainians, the development of the tourist business - that is, on the increase in the number of buyers, in particular, on the condition that the purchasing power of the population increases. An increase in the sales volumes of the processing industry in the domestic market requires maximum satisfaction of consumer requirements. Traditional requirements for the quality and price of products on the condition of the stabilization of the socio-economic situation in the country are inferior to other requirements, in particular, ease of use, increasing the nutritional value of products.

Modern living conditions cause nutritional problems and diseases caused by these problems. This is contributed by a significant share of canned products, ready-made culinary products, etc. in consumption. This leads to a deficiency in the consumption of vitamins, polyunsaturated fatty acids, etc. This creates the need for management measures at the state level, aimed at ensuring the appropriate level of value of food technologies with the content of irreplaceable nutrients, the use of technologies for specialized meat and fish products, and the introduction of technologies for preserving the nutritional value of agricultural raw materials, the use of specialized heat treatment methods. And this, in turn, requires the implementation of management measures at the level of enterprises regarding the modernization of technologies, and the introduction of the latest technological methods. The latest technological techniques for the formation of a sustainable sales market must have differences from the technologies of competitors. This is especially important for export goods.

Only new scientific developments and reliance on intellectual property for these developments are able to ensure the specified differences. Nowadays, the implementation of the latest food technologies, which can lead to the required level of nutritional value, sometimes requires significant costs, the activities of specialized institutes. For example, the introduction of nanotechnologies for the synthesis of such food additives, which are problematic or, at all impossible to obtain using traditional technological techniques. This applies, in particular, to obtaining carboxylates of food acids of biogenic metals (zinc, magnesium, manganese, etc.), and citrate of such a trace element as zinc, which is deficient in the diet of the population. The simultaneous application of a group of nano-carboxylates of food acids of biogenic metals opens up new opportunities for ensuring the nutritional value of technologies in the industry. Ukrainian industry cannot gain access to such technologies without the introduction of special management measures at the state level.

The introduction of the institute of intellectual property in the activities of processing enterprises, without which the application of the latest technologies in production activities is impossible, creates new areas of managerial activity in the food industry and requires new areas of investment and new knowledge and skills from management.

The above said allows formulating the directions of management efforts in the agricultural sector: promoting the development of high-tech industries capable of providing both domestic and foreign markets; promoting the technological development of infrastructural productions that ensure the activity of processing enterprises. In the absence of a sufficient level of investment funds, management efforts should ensure a less capital-intensive way of developing processing enterprises: step-by-step modernization, the introduction of certain technologies and production units; providing the achievement of the appropriate technological technical level of the operating production units, to form a simultaneous increase in their loading; application of product quality control systems; lobbying for the introduction of systemic state policy aimed at stimulating the processing component of the agricultural sector.

DISCUSSION

The presented article provides the results of research that the authors are currently continuing in the areas of study: ways to increase the share of individual and small farms in the volume of processing of agricultural raw materials; management actions regarding entering foreign markets. In our opinion, modern researchers: Chen et al [22], de Boon et al [23], Rudenko [24], and others greatly exaggerate the significance of the latest IT technologies for agricultural production and do not consider the fact that the development of processing technologies at present requires significant concentration of efforts and funds, which, in turn, requires the use of management measures not only at the corporate but also at the state level. The study of this sphere of activity is presented in our work. Researchers, in particular, Malysh [1] point to the importance of investments in the agricultural sector, but, in our opinion, the reasons for the unsustainable rate of investment have not yet been sufficiently studied. Scientists, in particular, Kotykova et al [29] pay attention to the problem of waste from processing enterprises, but the reasons for this and the directions of management actions to correct this situation, in our opinion, have not been studied enough. Therefore, attention is paid to these issues in the presented research.

CONCLUSIONS

Tactical and strategic tasks the solution of which helps to increase the share of processed products in the total volume of marketable agricultural products were identified and studied. It is indicated that the promotion of investments, first of all, in the processing industry and related spheres of activity is one of the main areas of activity of managers of all levels of the agrarian industry. The directions of management actions that should be aimed at increasing the investment cash flow have been established. It is indicated that until now the implementation of the tasks of managing the increase in investment income is characterized by a lack of integrity, simultaneity, coherence in certain areas, and inconsistency of fiscal policy. The rates of investment in the agricultural industry over the past years have been studied. It was established that the rate of investment in agriculture in some periods exceeded the rate of investment in the economy of Ukraine as a whole, but the investment process was characterized by instability. It has been proven that, with the streamlining of fiscal policy, the processing and food sector of economic activity is the most attractive component of the Ukrainian agro-industrial complex for investment income.

It is indicated that the appropriate level of institutional support for investment in the processing sector is able to form a synergistic effect on the development of the country's economy. Priority institutional directions for promoting the increase of investment flows are defined. It has been proven that the share of individual and small farms in the volume of processing in separate areas of activity is significant, which indicates the perspective of management actions to increase this share in order to flexibly respond to market needs. It is indicated that until now, a large share is made up of "residues and waste

of the food industry" in the structure of agrarian exports. This indicates the insufficient depth of processing of domestic enterprises, and the use of outdated technologies, and, on the other hand, allows us to identify a promising direction for increasing the economic efficiency of the processing sector. The analysis of the dynamics of the volumes of processing of agricultural products proved different, sometimes opposite, development trends for certain types of products, although in general, a trend for the fixation of annual volumes of production for certain types of products was established. It is indicated that the efficiency of management of processing enterprises, in particular with regard to access to foreign markets, forms the prerequisites for their sustainable development. Competition in this sphere of activity contributes to this process. It is indicated that preserving the value of food technologies requires the introduction of modern technologies in the processing sector. And this, in turn, requires the involvement of state-level management measures to promote the formation of scientific structures and schools; an increase in the role of the intellectual property institute in the activities of processing enterprises; the development of new directions of investment, and new knowledge and skills from management.

REFERENCES

1. Malysh, I.A. (2018). Theoretical and methodological approaches to the management of innovative and investment activities of enterprises of the agrarian sector of the economy. *Bulletin of the KHNAU named after V.V. Dokuchaeva "Economic Sciences"*, 4, 165-175. DOI: <https://doi.org/10.31359/2312-3427-2018-4-165>.
2. Bjornlund, V., Bjornlund, H., Van Rooyen, A.F. (2020). Why agricultural production in sub-Saharan Africa remains low compared to the rest of the world – a historical perspective. *International Journal of Water Resources Development*, 36(1), 20-553. DOI: <https://doi.org/10.1080/07900627.2020.1739512>.
3. Vilas-Boas, J., Klerkx, L., Lie, R. (2022). Connecting science, policy, and practice in agri-food system transformation: The role of boundary infrastructures in the evolution of Brazilian pig production. *Journal of Rural Studies*, 89, 171-185. DOI: <https://doi.org/10.1016/j.jrurstud.2021.11.025>.
4. Betzold, A., Carew, A.L., Lewis, G.K., Lovell, H. (2018). The emergence, articulation and negotiation of a new food industry initiative in rural Australia: boundary object, organisation or triple helix model? *Sociologia Ruralis*, 58(4), 867-885. DOI: <https://doi.org/10.1111/soru.12211>.
5. TerAvest, D., Wandschneider, P.R., Thierfelder, C., Reganold, J.P. (2019). Diversifying conservation agriculture and conventional tillage cropping systems to improve the wellbeing of smallholder farmers in Malawi. *Agricultural Systems*, 171, 23–35. DOI: <https://doi.org/10.1016/j.agsy.2019.01.004>.
6. Kassem, H.S, Ismail, H., Ghoneim, Y. A. (2022). Assessment of Institutional Linkages and Information Flow within the Agricultural Knowledge and Innovation: Case of Dakahlia Governorate, Egypt. *Sustainability*, 14(11), 6415. DOI: <https://doi.org/10.3390/su14116415>.
7. Bilan, Yu.V., Nitsenko, V.S., Samoilyk, Iu.V. (2017). Conceptual modeling of agri-food market development under economy's globalization. *Scientific bulletin of Polissia*, 3(11/1), 54-61. DOI: [https://doi.org/10.25140/2410-9576-2017-1-3\(11\)-54-61](https://doi.org/10.25140/2410-9576-2017-1-3(11)-54-61).
8. Horita, A. (2020). Japanese Agriculture and Capital Expansion: The Trans-Pacific Partnership and the Global Food Value Chain Strategy. *Journal of Contemporary Asia*, 51(4), 616-637. DOI: <https://doi.org/10.1080/00472336.2020.1788120>.
9. Stephens, E.C., Jones, A.D., Parsons, D. (2018). Agricultural systems research and global food security in the 21st century: an overview and roadmap for future opportunities. *Agricultural Systems*, 163, 1-6. DOI: <https://doi.org/10.1016/j.agsy.2017.01.011>.
10. Yi, J., Meemken, E.M., Mazariegos-Anastassiou, V., Liu, J., Kim, E., Gómez, M.I., Canning, P., Barrett, C.B. (2021). Post-farmgate food value chains make up most of consumer food expenditures globally. *Natural Food*, 2, 417-425. DOI: <https://doi.org/10.1038/s43016-021-00279-9>.
11. Cláudia, M.V., Dulce, F., Abrantes, P., Rocha, J., Pereira, P. (2021). Agricultural land systems importance for supporting food security and sustainable development goals: A systematic review. *Science of the Total Environment*, 806, 1-13. DOI: <https://doi.org/10.1016/j.scitotenv.2021.150718>.
12. Nicholson, C.F., Stephens, E.C., Kopainsky, B., Jones, A. D., Parsons, D., Garrett, J. (2021). Food security outcomes in agricultural systems models: Current status and recommended improvements. *Agricultural Systems*, 188, 103028. DOI: <https://doi.org/10.1016/j.agsy.2020.103030>.
13. Abrahám, J., Vošta, M., Čajka, P., Rubáček, F. (2021). The specifics of selected agricultural commodities in

- international trade. *Agricultural and Resource Economics. International Scientific E-Journal*, 7(2), 5-19. DOI: <https://doi.org/10.51599/are.2021.07.02.01>.
14. Anderson, C.R., Bruil, J., Chappell, M.J., Kiss, C., Pimbert, M.P. (2019). From Transition to Domains of Transformation: Getting to Sustainable and Just Food Systems through Agroecology. *Sustainability*, 11, 5272. DOI: <https://doi.org/10.3390/su11195272>.
 15. Pigforda, A.E., Hickeya, G.M., Klerk, L. (2018). Beyond agricultural innovation systems? Exploring an agricultural innovation ecosystems approach for niche design and development in sustainability transitions. *Agricultural Systems*, 164, 116-121. DOI: <https://doi.org/10.1016/j.agsy.2018.04.007>.
 16. Golian, V., Luchechko, Y., Shmarov, D. (2020). Determinants of the formation of a system for stimulating investment activity in the food processing industry sector. *Evropský časopis ekonomiky a managementu*, 7, 90-97. DOI: <https://doi.org/10.46340/eujem.2021.7.1.12>.
 17. Shchurevych, L. (2018). Mechanisms of the public agricultural policy of Ukraine. *State Department of Improvement and Development*, 5. URL: http://www.dy.nayka.com.ua/pdf/5_2018/103.pdf.
 18. Yatsenko, O., Nitsenko, V., Mardani, A., & Tananaiko, T. (2018). The impact of global risks on the world trade and economic environment. *Financial and credit activity: problems of theory and practice*, 4(27), 435-444. DOI: <https://doi.org/10.18371/fcaptop.v4i27.154279>.
 19. Yatsenko, O., Nitsenko, V., Mardani, A., Streimikiene, D., & Tananaiko, T. (2019). Global Risks of Trade and Economic Cooperation of Ukraine with Countries of the Northern American Region. *Montenegrin Journal of Economics*, 15(3), 217-225. DOI: <https://doi.org/10.14254/1800-5845/2019.15-3.16>.
 20. Yatsenko, O.M., Yatsenko, O.V., Nitsenko, V.S., Butova, D.V., & Reva, O.V. (2019). Asymmetry of the development of the world agricultural market. *Financial and credit activity: problems of theory and practice*, 3(30), 423-434. DOI: <https://doi.org/10.18371/fcaptop.v3i30.179821>.
 21. Yatsenko, O., Reznikova, N., Karasova, N., Musiets, T., Lavrinenko, O., & Nitsenko, V. (2020). Modernization of the Format of Ukraine's Trade Integration with the EU in the Conditions of Implementation of the DCFTA. *Problemy Zarządzania - Management Issues*, 18(4), 101-124. DOI: <https://doi.org/10.7172/1644-9584.90.6>.
 22. Chen, Q.W., Guan, Z.Q. (2019). Analysis on the E-commerce development of agricultural products. *Atlantis Press*, 15, 72-75. DOI: <https://doi.org/10.2991/ismss-19.2019.22>.
 23. de Boon, A., Sandstrom, C., Rose, D.C. (2021). Governing agricultural innovation: A comprehensive framework to underpin sustainable transitions. *Journal of Rural Studies*, 89, 407-422. <https://doi.org/10.1016/j.jrurstud.2021.07.019>.
 24. Rudenko, M. (2019). The impact of digital technologies on agricultural production: a methodical aspect. *Scholarly notes of TNU named after V.I. Vernadskyi. Series: Economics and management*, 30 (69), 6, 30-37. DOI: <https://doi.org/10.32838/2523-4803/69-6-28>.
 25. About the personal peasant economy. Law of Ukraine dated 15.08.2020, № 29. URL: <https://zakon.rada.gov.ua/laws/show/742-15#Text>
 26. Luchechko, Yu. (2018). Modernization of the industry of processing of agricultural raw materials as a priority trend of investment activity in Ukraine. *Agrosvit*, 24, 60-66. DOI: <https://doi.org/10.32702/2306-6792.2018.24.60>.
 27. Mykhailenko, O., Khilchenko, I. (2019). Agricultural sector of Ukraine: the modern state, problems and prospects of reform in the field. *Modern Economics*, 15, 148-152. DOI: [https://doi.org/10.31521/modecon.V15\(2019\)-21](https://doi.org/10.31521/modecon.V15(2019)-21).
 28. Bazaluk, O., Struchaiev, N., Halko, S., Miroshnyk, O., Bondarenko, L., Karaiev, O., Nitsenko, V. (2022). Ways to Improve the Efficiency of Devices for Freezing of Small Products. *Materials*, 15, 2412. DOI: <https://doi.org/10.3390/ma15072412>.
 29. Kotykova, O., Babych, M., Oliinyk, T. (2020). Measures to reduce food loss and waste in Ukraine. *Agricultural and Resource Economics*, 6(4), 144-167. URL: https://ageconsearch.umn.edu/record/308590/files/8_Kotykova_article.pdf.

Пономарьова М., Євсюков О., Шовкун Л., Золотарьова С., Крамаренко І.

ФОРМУВАННЯ ТА УПРАВЛІННЯ РОЗВИТКОМ АГРАРНОГО ВИРОБНИЦТВА Й ПЕРЕРОБКОЮ СІЛЬГОСППРОДУКЦІЇ ТА ЦІННІСТЬ ХАРЧОВИХ ТЕХНОЛОГІЙ

Мета дослідження полягає в аналізі стану переробного сектора; визначенні задач управління, які сприятимуть збільшенню частки переробки в загальному обсязі аграрної продукції та обґрунтуванню напрямів управлінських заходів щодо забезпечення належного рівня цінності харчових технологій. Виявлені й досліджені стратегічні завдання, вирішення яких сприяє збільшенню частки переробленої продукції в загальному обсязі товарної продукції сільськогосподарства. Указано, що одним із головних напрямів діяльності управлінців усіх рівнів аграрної галузі є сприяння інвестиціям, у першу чергу в переробну промисловість і суміжні сфери діяльності. Визначені першочергові інституційні напрями сприяння збільшенню інвестиційних потоків. Це забезпечить високий рівень технологій, зменшить обсяг відходів переробки, збільшить додану вартість аграрної продукції, забезпечить надходження до бюджету країни та регіонів, створить передумови синергетичного впливу на розвиток економіки країни. Доведено, що частка особистих селянських господарств в обсягах переробки є вагомим фактором, що вказує на необхідність управлінських дій для збільшення цієї частки. Виявлено, що досі в структурі аграрного експорту велику частку складають «залишки і відходи харчової промисловості», що свідчить про недостатню глибину переробки сировини, використання застарілих технологій та необхідність управлінських заходів для виправлення цього. Указано, що ефективність управління переробними підприємствами, зокрема щодо виходу на зовнішні ринки, формує передумови їхнього сталого розвитку. Уперше вказано, що збереження цінності харчових технологій потребує впровадження сучасних технологій у переробному секторі, що вимагає: задіяння управлінських заходів державного рівня для сприяння утворенню наукових структур цього напрямку; збільшення ролі інституту інтелектуальної власності в діяльності переробних підприємств; потребує нових напрямів інвестування та нових знань і вмінь від менеджменту.

Ключові слова: управління розвитком, аграрне виробництво, переробка сільгосппродукції, цінність харчових технологій

JEL Класифікація: M11, O00, Q19