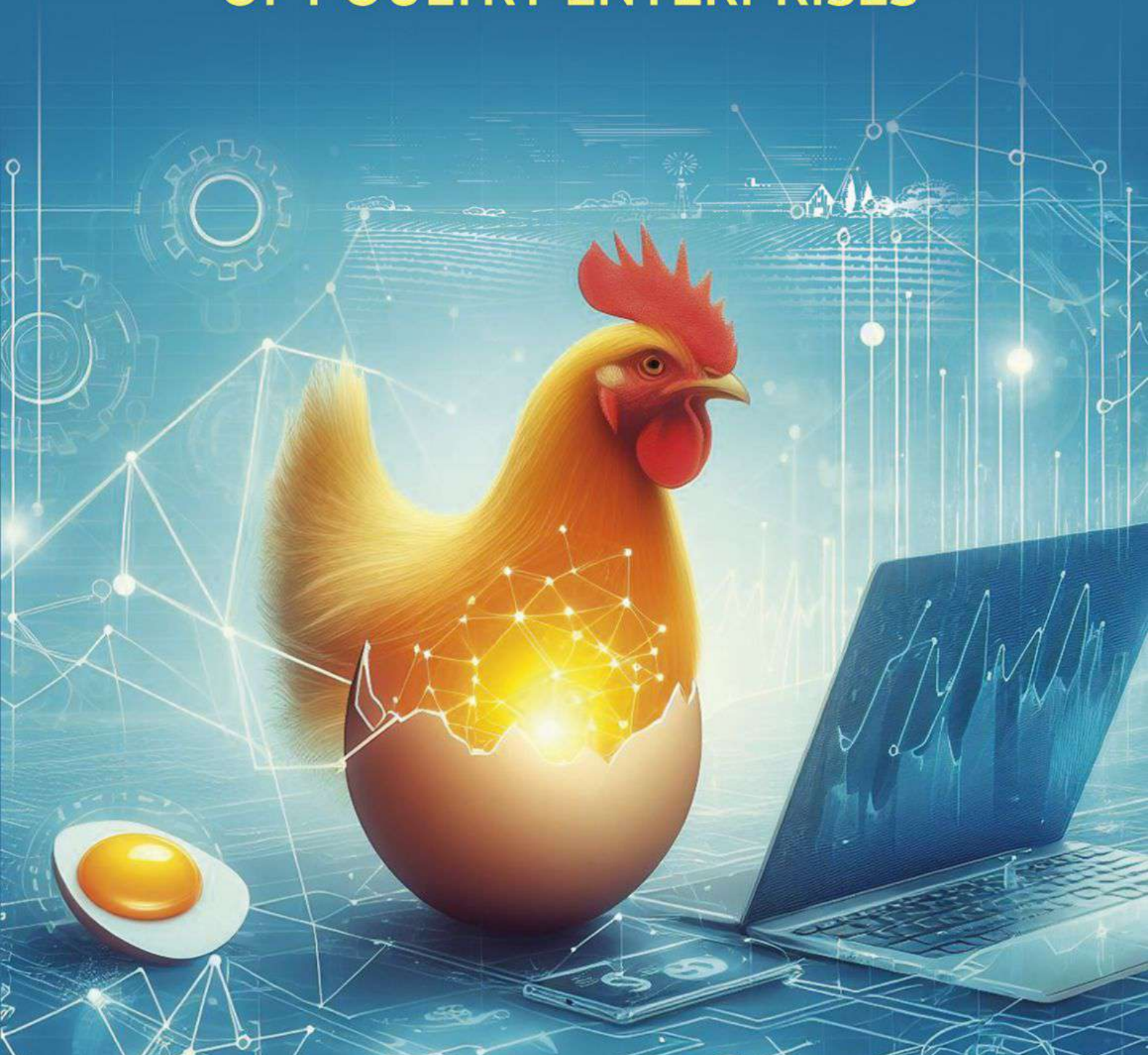


Ihor VINICHENKO | Yevhenii KOBETS | Maryna POLEHENKA  
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# INCREASING THE ECONOMIC EFFICIENCY AND COMPETITIVENESS OF POULTRY ENTERPRISES



**Ihor VINICHENKO, Yevhenii KOBETS, Maryna POLEHENKA,  
Alla SITKOVSKA, Oksana PROKOPYSHYN**

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Increasing the economic efficiency and competitiveness of poultry enterprises : monograph. Dnipro, DSAEU, 2026. 230 p.

In the monograph, theoretical, methodological and practical aspects of the formation and implementation of organizational and economic tools for improving the economic efficiency of poultry enterprises have been investigated. Stages of evolution of the concept of efficiency are specified, taxonomic features of the category “efficiency of enterprise” are systematized. A systematic approach to the definition of the category “economic efficiency of poultry farming” has been proposed, a methodology for assessing the economic efficiency of poultry enterprises has been provided.

A retrospective analysis of the economic efficiency of poultry production and its competitiveness was carried out, taking into account all-Ukrainian development trends. The main directions for increasing the economic efficiency of poultry enterprises are proposed, in particular, the algorithm for diagnosing economic development has been improved, and a methodical toolkit for the formation of the production program of poultry enterprises has been developed. Proposals for the formation of an integrated system of material flow management and optimization of flow processes of poultry enterprises by creating a single information and logistics center are formulated, and a detailed algorithm for the formation and implementation of the concept of strategic management of the competitiveness of poultry enterprises is proposed.

The monograph is meant for researchers, lecturers, masters, graduate and undergraduate students of the economic higher educational institutions; it will also be of use to practical specialists of agrarian enterprises and employees of agricultural organizations.

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A. Sitkovska, O. Prokopysyn, 2026**

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Алла СІТКОВСЬКА, Оксана ПРОКОПИШИН**

**ПІДВИЩЕННЯ ЕКОНОМІЧНОЇ ЕФЕКТИВНОСТІ ТА  
КОНКУРЕНТОСПРОМОЖНОСТІ ПІДПРИЄМСТВ  
ПТАХІВНИЦТВА**

**МОНОГРАФІЯ**

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**I-54 І. Вініченко, Є. Кобець, М. Полегенька, А. Сітковська, О. Прокопишин** Підвищення економічної ефективності та конкурентоспроможності підприємств птахівництва: монографія. Дніпро, ДДАЕУ, 2026. 230 с.

У монографії розглянуто теоретико-методичні та практичні аспекти формування й реалізації організаційно-економічного інструментарію підвищення економічної ефективності та конкурентоспроможності підприємств птахівництва. Конкретизовано етапи розвитку еволюції поняття ефективності та конкурентоспроможності, здійснено систематизацію таксономічних ознак категорії “ефективність підприємства”. Запропоновано системний підхід до визначення категорії “економічна ефективність птахівництва”, надано методологію оцінки економічної ефективності та конкурентоспроможності підприємств птахівництва.

Проведено ретроспективний аналіз економічної ефективності виробництва продукції птахівництва та її конкурентоспроможності з урахуванням загальноукраїнських тенденцій розвитку. Запропоновано основні напрями підвищення економічної ефективності підприємств птахівництва, зокрема удосконалено алгоритм діагностики економічного розвитку та розроблено методичний інструментарій формування виробничої програми підприємств птахівництва. Сформульовано пропозиції щодо формування інтегрованої системи управління матеріальними потоками та оптимізації потокових процесів підприємств птахівництва шляхом створення єдиного інформаційно-логістичного центру. З метою успішної імплементації в підприємствах птахівництва концепції стратегічного управління конкурентоспроможністю розроблено теоретико-практичні рекомендації, які включають

Монографія призначена для наукових співробітників, викладачів, магістрів, аспірантів та студентів економічних вищих навчальних закладів; він також буде використовуватися практичним фахівцям аграрних підприємств і працівникам сільськогосподарських організацій.

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## INTRODUCTION

The economic development of any country largely depends on solving the problem of providing the population with the necessary food products. An extremely important component of this task should be considered to meet the needs of consumers in high-protein foods. In modern conditions, the enterprises of the poultry industry have high potential for such provision. This industry is determined by ripeness, high reproduction rates of livestock, low energy intensity and a high level of mechanization and automation of production processes. The specificity of ensuring the efficiency of poultry enterprises is also determined by the biological characteristics of the products – high growth energy, feed conversion, poultry fertility, the nutritional value of eggs, meat, etc.

Recently, with the general decline of animal husbandry, poultry farming is an industry developing quite rapidly and dynamically, but remains problematic, because a significant part of enterprises are unprofitable. The need to stabilize and develop poultry enterprises, the saturation of the market with domestic and imported goods, Ukraine's accession to the WTO, as well as increasing consumer requirements for the quality and safety of products determine the need to develop modern technologies of market behavior of poultry enterprises and the formation and implementation of a strategy to increase their economic efficiency.

Systematic studies of the methodology of choosing and practicing the directions of increasing the efficiency of enterprises have been investigated in the works of domestic and foreign scientists-economists: S. Anokhina, V. Andriychuk, A. Honcharuka, N. Vasilyeva, L. Berezina, G. Pavlova, O. Goncharenko, L. Katan, S. Gabor, S. Khaminich, V. Diesperova, S. M.G. Schumpeter and others.

The research of the theory, methodology and development of measures to increase the economic efficiency of poultry enterprises is devoted to the work of T. Bakina, I. Vinichenka, Yu. Ischenko, L. Kovalenko, V. Mesel-Veselyaka, O.

Prokopishin, S. Sednetskaya, I. Shchetinina, F. Yaroshenko, O. Gaydayenko, V. Zabolotny, P. Sabluka, V. Pryadka, N. Transparent, O. Shubravskaaya and others.

However, the issues of a systematic approach to the understanding of efficiency as a comprehensive economic characteristic, the development of a set of scientific and practical measures to increase the competitiveness of poultry production in the consumer market, the formation of mechanisms for adapting poultry enterprises to modern conditions of innovative development, taking into account the conditions for implementing the country's international integration aspirations, remain insufficiently researched. The above-mentioned necessitated a separate scientific research.

**SECTION 1.**  
**THEORETICAL AND METHODOLOGICAL BASES OF FORMATION  
OF ECONOMIC EFFICIENCY OF POULTRY ENTERPRISES**

**1.1. The essence of efficiency as an economic category and its classification**

Today, the efficiency of agrarian enterprises occupies an important place and becomes relevant for the economy of Ukraine. The efficiency of agricultural formations is the main characteristic of their economic activity, which reflects the process of economic growth and maximum use of the country's potential to increase its competitiveness. Therefore, the concept of "efficiency" is a complex definition related to the action of objective economic laws and the influence of external factors that create conditions of uncertainty and have a direct impact on the final results of economic activity of agricultural enterprises. Effective economic growth depends on the dynamics and level of efficiency of each enterprise. The problem of production efficiency is relevant at present, since the production activity is characterized and evaluated by the achieved level of economic efficiency. In order for the activities of enterprises to be successful white, the implementation of its development strategy should involve the implementation of economic activities aimed at obtaining high results of activities, which, in turn, will improve the efficiency of the enterprise as a whole.

The relevance of the study of theoretical and methodological aspects of increasing the efficiency of poultry enterprises is constantly growing, as evidenced by a number of scientific and methodological works. For many years, this problem has been developed by many domestic and foreign scientists, namely: [12; 14; 23; 32; 40; 70; 79; 90; 92-94; 109; 131; 135; 155; 174; 191; 195-197, etc.]. However, despite the abundance and diversity of research, this issue is relevant now.

Indeed, the modern directions of science, where the problem of increasing the efficiency of poultry enterprises is considered, is quite large and has hundreds of publications. This is due to the fact that increasing the efficiency of production and economic activity is the leading task of each enterprise and acts as the main characteristic of their economic activity.

Despite the significant number of publications in this area of research, “efficiency” is the most common and most used term in various spheres of public activity. The problem is, what should be understood under efficiency? The ambiguity of the opinion of scientists regarding the definition of the category “efficiency” makes relevant the need for detailed study of this definition.

Most domestic and foreign scientists and specialists in economics and management of enterprises investigate the economic content of efficiency on the basis of generalization and critical rethinking of scientific works, which contain the stages of formation of this category, its economic nature is considered, its relationship with such concepts as economics, rationality, effectiveness is determined. Interpretations of efficiency differ quite significantly: from understanding the efficiency as a ratio of the effect (result) with the resources spent on it to its definition as a level of achieving the goals of the organization to meet public needs and its ability to live in a competitive environment.

The concept of “efficiency” is one of the most common and is used in many spheres of human activity to characterize the effectiveness of production in both the material and social spheres. It includes not only material results of activity, but also the level of social development of society, which is achieved in the development of certain sectors of the national economy. Efficiency includes improving working conditions and life, the development of science and culture, increasing the material and cultural standard of life of the people. Despite the close relationship, the concept of “economic efficiency” includes a narrower range of questions. Economic efficiency is a form of achieving the goal of production and is that reflects the level of return of labor and material resources in production. In addition, the economic efficiency of the enterprise is judged by

the extent to which the achieved results correspond to the expectations and needs of consumers and society as a whole [123]. Thus, in the Great Explanatory Dictionary of Modern Ukrainian, it is determined that “efficiency” is a characteristic of any object (device, process, event, type of activity) that reflects its social benefits, productivity and other positive qualities [21].

The term “efficiency” comes from the word “effect”, which is literally from the Latin “efficienta” and means the effectiveness of a certain process, action [5] or the effectiveness of expenses invested in certain activities in order to obtain the desired results [45]. That is, determining the efficiency of production is to evaluate its results, which can be both the volume of manufactured products and profit. Very often, efficiency is defined as achieving maximum effect with minimal resource expenditure. The effect should be understood as the achieved result in material, monetary or social terms, and the economic effect is the result of production, production value, national income, gross product, profit growth and cost reduction [12].

Analysis of a number of fundamental works devoted to the problems of ensuring “efficiency” allows to note that the traditional logic of studying the concept of efficiency in the economic literature is reduced to the following: 1) conducting a discussion on the content and definition of the category of “economic efficiency”; 2) study the evolution of its formation.

Regarding the discussion of content and the definition of “efficiency” as an economic category, we note that in the end it comes down to the fact that efficiency gives an idea of the degree of effectiveness of the use of factors of production. In particular, in this context, we can give the definition of efficiency, which is proposed [66, 75, 98, 192, 200]. They argue that economic efficiency is the achievement of the greatest results at the lowest cost of living and living work. It is a specific form of manifestation of the law of saving time [93].

Many domestic economists consider efficiency as the ratio of the effect, the result of activity to costs. For example, S. Prokopyvyi believes that “efficiency – as an economic category determined objectively by the current law of saving working time, which is the fundamental substance of wealth and the

measure of costs necessary for its accumulation and use by society” [126]. Scientist A. Shegda argues that “the efficiency of the enterprise represents a comprehensive assessment of the final results of the use of basic and working capital, labor and financial resources and intangible assets for a certain period of time” [191]. In turn, the economic encyclopedia states that “efficiency is the ability to bring effect, effectiveness of the process, project, etc., which is defined as the ratio of the effect, the result to the costs that ensured this result” [92].

From the point of view of A. Bugutsky, the production efficiency can be considered as the production of goods with the lowest cost, the use of a minimum amount of resources for the production of a certain volume of products at a minimum average total cost [16]. At the same time, P. Sabluk believes that the efficiency criterion always shows the ratio of results to costs [140]. YU. Novikov points out that the concept of “economic efficiency” means always a positive result, which is expressed in monetary form [96]. Karaman argues that economic efficiency is the ratio of the result and all labor costs and funds used for its production [52]. V.Iryychuk defines economic efficiency as the ratio between resources and production results, in which valuable indicators of production efficiency are obtained [3].

In our opinion, the most complete can be considered the definition of efficiency. which is offered by scientist E. Hradoboev. He considers this category not only as the ability of an enterprise to receive more useful benefits per unit of resources used, but also as the ability to develop, maintaining a balanced interaction of all its subsystems [32].

A fairly wide definition of efficiency is given by V. Shapiro and I. Mazur, seeking to include in it as much as possible aspects of efficiency. In their opinion, effective economic activity is characterized by such features as high performance, simplicity and rationality of technology and organization, accuracy, reliability of all elements (equipment, materials, employees), high quality of processes and their result, compliance with the goals of the organization, entrepreneurship, high activity of the enterprise staff, etc. [196].

In modern economic science, efficiency is also a reflection of successful management of the company's resources and costs in the long term. Thus, the scientist P. Drucker, in his management work on the ratio of effectiveness and efficiency, says the following: "To be successful for a long time, to survive and achieve its goals, the enterprise must be both effective and effective." According to him, the effectiveness is the result of "doing the right things. Both the first and the second are equally important..." [40]. The scientist emphasizes that first managers determine the correct target orientation of the enterprise, and then try to achieve it using a minimum number of resources.

Efficiency can always be measured and expressed quantitatively. It is the effectiveness as an indicator that reflects the correct division of things that is obliged to have a quantitative expression. So, effectiveness is a certain indicator of some process, an indicator that at the end of the process something is obtained, pre-planned. The effectiveness of the enterprise means its ability to achieve the established external goals, the aim is to ensure that all its organizational decisions and actions meet the criteria established by the external environment [116].

The lack of a clear definition of the category of efficiency has led to the fact that domestic specialists, quoting and complementing each other, try to introduce their own definition of efficiency into scientific circulation. However, in our opinion, it all depends on what the author considers as an effect and what theory (direction) he adheres to. By conducting a comparative study of the main approaches to periodization of efficiency studies available in modern literature, we provided our own vision of this issue.

The term "efficiency" as "effectiveness" first began to be used in economic literature in the eighteenth century in the works of one of the founders of classical political economy V. Petty and the founder of the school of physiocrats F. Keene. Initially, the term was used to evaluate government and private measures in terms of their impact on the economy [109]. At the time, this term was not widely used among economists. A well-known classic of political economy, Adam Smith, instead of "efficiency", used the term "productivity" in

determining effectiveness. However, the development of industrial bourgeoisie and manufactory production determined the further fate of the term, forming a new class of management subjects – managers [155].

In the modern context from the nineteenth century, the term “efficiency” began to be used by D. Ricardo, considering “efficiency” as the ratio of results to certain costs, exploring efficiency as an economic category [135]. Since then, the concept of “efficiency” has been applied not only in the economy, but also to evaluate various actions. With the expansion of machine manufacturing in the economy gradually began to realize the role of engineers, which depended on solving not only economic problems, but also tasks related to the organization of production. This led to the fact that the term “efficiency” was used not only in the economic sense, but also in the theory of management. Thus, the representative of management theorists, G. Emerson, in his writings used “efficiency” as the most useful relationship between aggregate costs and economic results, thereby linking efficiency with functionality [195].

The period, from the XIX century to the beginning of the twentieth century, is characterized by the appearance of “target efficiency” – the ratio of the result to the goals set. During this period, it was about efficiency from the standpoint of the criterion for assessing the achievement of the goal, to describe which the performance indicator was used. In turn, the conformity of the result and the goal began to be called reliability, which continues to play a dominant role in determining efficiency to the present day. K. McConnell and S. Brew in Economics argue that efficiency characterizes the relationship between the number of units of limited resources used in the production process and the quantity of the desired product. An increase in the amount of product received from this amount of costs indicates an increase in efficiency, and a decrease in the volume of the product from this amount of costs indicates a decrease in efficiency [79].

From the point of view of V. Pareto, the efficiency should be understood as the ratio of costs and results. Studying the conditions of maximum economic well-being of society with limited resources, he concluded that social welfare will be maximum in such a state of economy, when no one can improve their

situation, without worsening the state of another (welfare theory). From the point of view of optimality theory, he suggested that when justifying managerial decisions, lean on the comparison of boundary values, and build all economic activity on a combination of minimum and maximum costs and results. Then the economic state of the system will be effective, in which the needs of all members of society are most fully met, taking into account the limited resources and the alternative to their use [197].

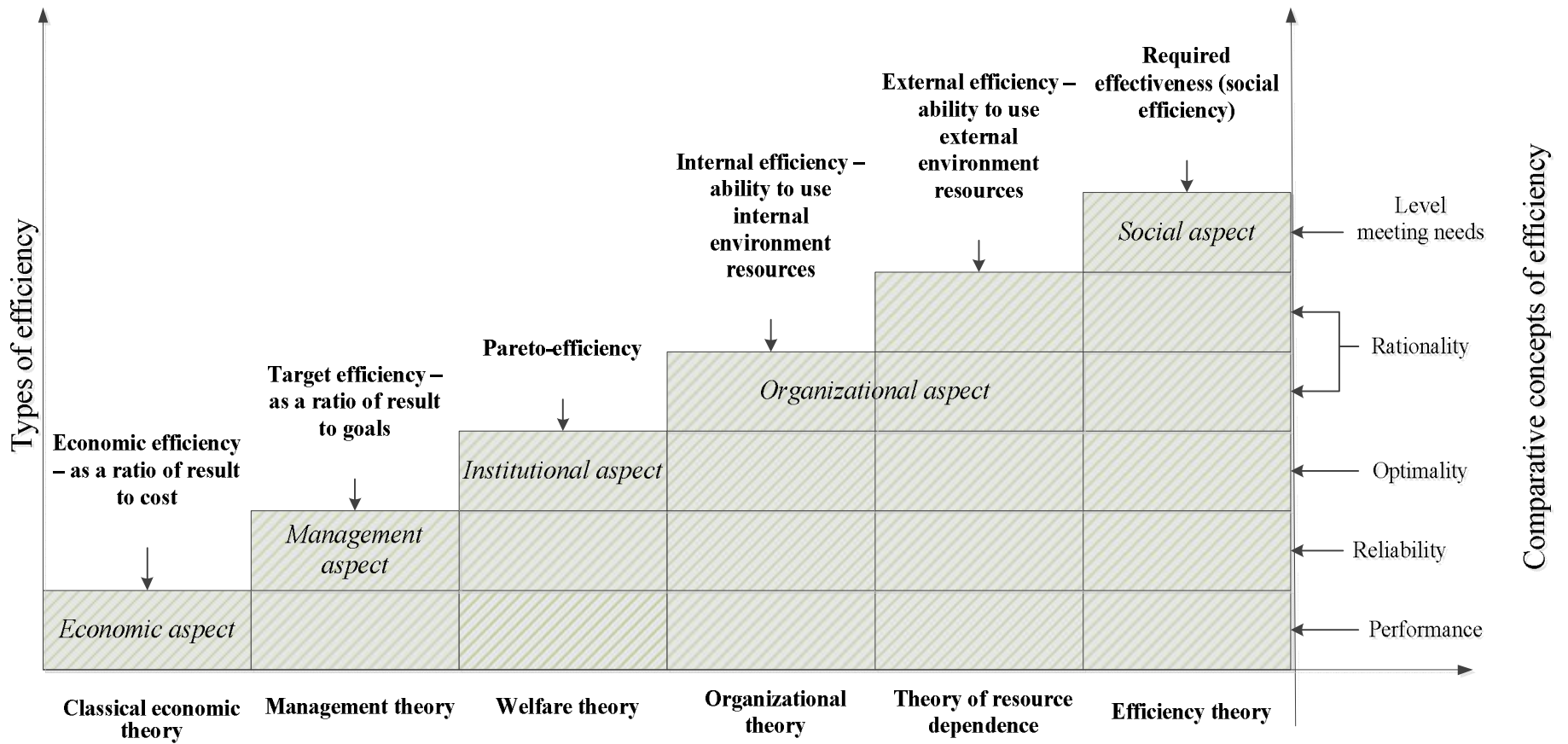
The next two stages of the evolution of the category “efficiency” are related to the concept of “rationality”, which is characteristic of the rational concept in organizational theory (M. Weber). However, since the late 1960s. early 1970s. efficiency begins to be considered as the ability to interact with the external environment in order to reduce resource dependence on others and increase their dependence on themselves. That is, no enterprise can create all the necessary resources and make itself self-sufficient. Therefore, it takes them from the external environment, which is a set of resource niches, in other words, enterprises – sources of resources. (theory of resource dependence) [203]. Thus, all attention is concentrated on a set of problems related to the rational use of resources of the external and internal environment of the enterprise.

The most important is the next phase of the evolution of the term “efficiency”, which we correlate with the emergence of efficiency theory. The subject of study of efficiency theory was the question of quantitative evaluation of qualitative characteristics and efficiency of functioning of complex systems. The main contribution to the development of efficiency theory was made by the outstanding French economist M. Alle [2], who formulated the condition for maximum efficiency. The criterion for maximum efficiency of the market economy M. Alle considers meeting the needs of people. In this regard, in his opinion, economic science is faced with determining maximum efficiency with significant difficulties caused by the production of a variety of heterogeneous goods that can be distributed inefficiently in terms of meeting needs. Therefore, with the same distribution of income, the maximum efficiency of the production system does not provide maximum efficiency in the distribution of consumer goods.

According to M. Alle, ensuring economic efficiency is to determine how to best meet the needs of people and what place in their needs occupy material needs. This contributed to the allocation as an independent category of “necessary” efficiency, which expresses the degree of reflection of the need for the goal and the choice of the most effective means of their reflection [61], “target” efficiency as a result-to-goal ratio [195] and “economic” efficiency as a result-to-cost ratio [135]. Since economic efficiency gives an idea only of the effectiveness of the use of factors of production, then to characterize the degree of satisfaction of social needs and goals of society began to use the concept of “social efficiency”, further combining these two aspects into “socio-economic” efficiency. Today, social efficiency becomes one of the priority areas of activity, but the main role still belongs to economic efficiency, since it is its increase that gives the enterprise the opportunity to solve social problems.

Thus, the multifaceted concept of efficiency is manifested in connection with the inclusion of various aspects of the enterprise: economic, management, social. At the same time, the economic content of efficiency remains as follows: depending on the aspect of the study is the ratio of the results of production and economic activity with the incurred costs, goals, values, needs. In practice, it is very important that the production of products is not material – and energy intensive, so that the results are accompanied by a reduction in costs per unit and compensation for the sale of products were high. In other words, the essence of efficiency lies not only in the effect as a result of any actions or production, but also in the extent to which this effect is justified. It all depends on which aspect is studied and has the greatest interest from the perspective of the study.

The modern stage of evolution is distinguished by the priority of synthetic interpretations of efficiency. The emphasis in the essence of the concept of “efficiency” is aimed at identifying new system-forming factors of production, and the main criterion for efficiency becomes their compliance with the costs, goals, values, needs of consumers. Stages of evolution of the concept of effectiveness within the development of various scientific theories are presented in Fig. 1.1.



Stages of development of the concept of efficiency

**Fig. 1.1. St ages of evolution of the concept of “efficiency”**

Source: adapted [5; 10; 13; 15; 16; 23; 34; 91; 133]

Thus, analyzing the research of scientists, it can be argued that effectiveness is a general scientific problem, and it is based on the achievements of economic science itself. Sharing the views of leading scientists to determine economic efficiency, we offer our vision of this category, namely efficiency is an economic category that reflects the ability of the enterprise to achieve its goal and is characterized by the maximum-optimal ratio of cost and effective components, taking into account the interaction of internal and external factors of production [111].

Our proposed definition, in our opinion, has a number of advantages. Firstly, when formulating it, we go beyond the generally accepted definition of efficiency as a ratio of result and cost, thus emphasizing that efficiency is not only an economic, but also a management category that must be used to evaluate various aspects of the enterprise. Secondly, in this interpretation, we consider the result as a system-forming factor, which leads to an increase in the profit of the enterprise by saving costs. Thirdly, we include in this targeting elements of the internal and external environment of the enterprise, indicating that efficiency can change both under the influence of cost management and goal achievement, and as a result of changing the priorities of values and customer needs.

Thus, the modern content of efficiency consists in the ratio of the result with controlled and unmanaged variables. Based on this, the needs of buyers are considered as external factors affecting the efficiency of the enterprise, and tools and methods of cost management – as internal factors for ensuring the efficiency of production. Based on the fact that efficiency acts as a measure of the results obtained by the enterprise and is used for various assessments and justification of economic decisions, distinguish different types of efficiency for certain needs of the enterprise. There are more than 20 classifications of effectiveness in the scientific literature. The most common and generally accepted is the classification, according to which efficiency acts in three ways: economic, social and socio-economic [70].

Economic efficiency – reflects the correspondence of costs and results of functioning of the enterprise to the goals and interests of its participants in monetary form. Social efficiency – correspondence of the results of conducting economic activities to the basic social needs of society and interests of an individual. Socio-economic efficiency is manifested in order to achieve maximum economic effect at given parameters of social environment. In turn, S. Pokropyvyi argues that the content of economic and social efficiency are closely related to each other [127]. Increasing economic efficiency contributes to the growth of social efficiency. The main factor affecting the increase in economic efficiency is technical progress. It is ultimately always associated with an increase in the qualification structure of employed and meaningful work, and hence with the growth of the needs of workers, which must be met. Therefore, even with a purely economic approach to the efficiency of its increase in one way or another will contribute to the social alignment and more harmonious development of the employee as a person. Increasing social efficiency is also impossible without increasing economic efficiency.

Most researchers also distinguish such types of efficiency as technological, environmental, socio-ecological. Technological efficiency is the result of the interaction of factors of production, characterizing the achieved productivity of living organisms used in agriculture as means of production [99]. Efficiency should be characterized not only by economic indicators, the level of well-being of the population, but also by the state of the environment. The essence of environmental efficiency lies in the effectiveness of the use in the production process, in addition to material and labor costs associated with environmental pollution, as well as costs for the production of agricultural products, which arise from the deterioration of the environmental state [141]. Socio-ecological efficiency – characterizes the aggregate economic performance of agricultural products taking into account the environmental impact of agro-industrial production on the environment [84].

At the same time, with the development of society, the needs of people grow, their structure changes and, accordingly, the activities of various enterprises are adjusted, which becomes possible only due to technical progress, which, in turn, leads to the emergence of conditions that contribute to the growth of economic efficiency. We agree that the introduction of high social results helps to increase the economic efficiency of agricultural production. This is due to the fact that satisfaction with working conditions, proper physical and moral health of people creates additional incentives and conditions for increasing productivity and increasing on this basis the efficiency of production. Based on this, we can conclude that economic and social efficiency are in organic combination. Scientist S. Prokopyvyi, distinguishes such types of effectiveness as:

- at the place of obtaining the effect: local – is defined as a specific result of activity, the result of which is a certain profit (income, profit), and national economic – efficiency is considered as a cumulative effect in the areas of production and consumption of relevant goods or services;

- the degree of increase in the effect: primary – is defined as the initial disposable effect, obtained as a result of certain activities, the introduction of profitable technical, organizational or economic measures, cartoon – characterizes the результат of innovation, which extends to other branches of production and synergistic – the essence of which lies in the combined impact of the aggregate of certain innovations on the financial and economic state of the business entity, when the overall effect exceeds the purely arithmetic sum of the impact on the activities of each individual innovation, that is, when each innovation enhances the impact of all others [127].

Along with the above types of classification, the scientist proposes to classify the effectiveness of activities according to such features as: according to the method of calculation – absolute and comparative; the structure of organizational activities – the efficiency of the workplace, subdivision, system as a whole; by type of economic growth – efficiency of extensive and intensive

development; in the direction of innovation and investment activity – efficiency of science, technology and technology, organizational and managerial innovations. investment projects and programs; by the nature of costs – the efficiency of current and one-time costs; by the object of assessment – full (integral), partial (separate) and factor (multipurpose) [127].

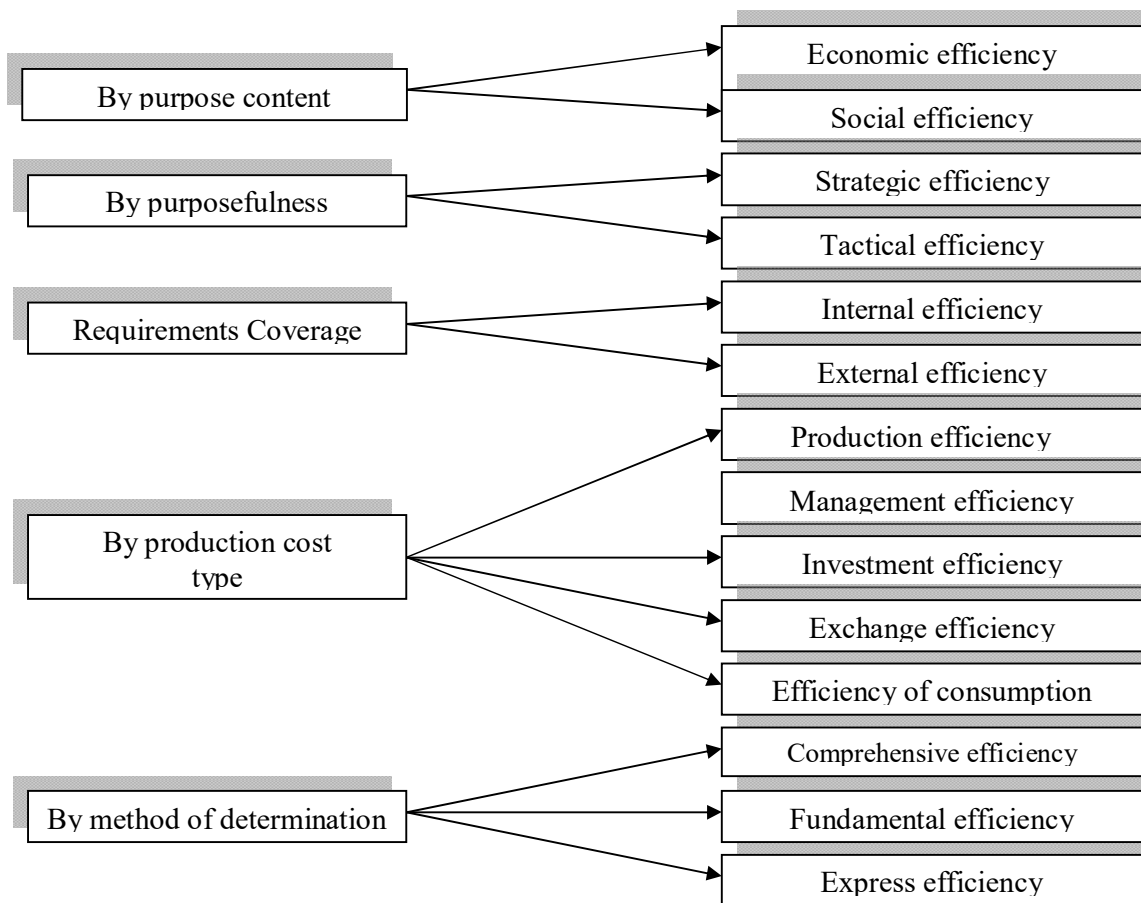
Organizational changes and organizational development affect efficiency by improving management and managed enterprise management systems. At the same time, the economic efficiency of management is determined, on the one hand, as a result of improving the management and managed systems, on the other – on the basis of transformation of organizational and economic efficiency. Depending on what components of control is the comparison of the result, distinguish internal and external efficiency.

I scurvy and other views on the classification of types of efficiency. In particular, B.Karlof distinguishes static and dynamic efficiency of the organization [53]. Static efficiency is the main factor in assessing and managing the company's activities for a short period of time, when operational and tactical issues are solved, which do not take into account the full and qualitative restoration of the production base. Dynamic efficiency involves achieving higher results due to flexible variation of resources and changes in technology in the long-term. Dynamic efficiency is a way to maintain high competitiveness of the enterprise for a long period [76]. Scientists B. Binkin and V. Chernyak propose to classify efficiency as functional, which is the ratio of result to goal and economic – as the ratio of result to cost [11].

In turn, investigating methodological issues of management effectiveness, I. Markina identified three main types of efficiency: necessary- the ratio of goals to needs, ideals, norms; effective – the ratio of the achieved result to the intended goals; costly –connection of costs to achieved results. In her opinion, these types of efficiency form such a chain: the needsexcessive efficiency determines the content of the effective, and effective – costly [80]. Given that efficiency is inherent in the purposefulness of action, we believe that such a

classification most fully characterizes the essence of efficiency from a managerial point of view.

Having studied the available in the economic literature taxonomic signs of efficiency, agreeing with their existence and the possibility of application in different areas of research, we offer our own classification of types of efficiency, which is based on the components of the internal and external environment of the enterprise: costs, goals, values and needs. Thus, in our opinion, the classification of types of efficiency, presented in Fig. 1.2, will be optimal.



**Fig. 1.2 Classification of efficiency types**

*Source: adapted [10; 11; 13; 14; 70; 80; 81; 93; 94; 131; 168; 187; 189; 191, etc]*

The classification of efficiency by the content of the goal involves the allocation of social and economic efficiency; for purposefulness – tactical and strategic efficiency. Strategic efficiency may well act as a criterion for achieving goals in the long term, and its target function is to maximize the value of the

enterprise. Tactical efficiency shows the effectiveness of the current activity of the enterprise.

Classification of types of efficiency by coverage of needs involves the allocation of internal and external efficiency. Internal efficiency reflects the use of internal capabilities of the enterprise (management of its internal resources) and reflects its own assessment of the effect obtained from the activity of the enterprise. External efficiency reflects the use of external capabilities of the enterprise (the level of usefulness of the product produced, the share of the enterprise in the market of finished products and its potential opportunities).

External and internal efficiency are also not new types of efficiency, we have changed only the sign of their isolation. Thus, external efficiency will reflect the degree of satisfaction of the company's public needs, the level of usefulness of the manufactured products and services provided, the potential capabilities of the enterprise and its market share. Internal efficiency is determined by the effectiveness of the enterprise on the basis of the ratio of results and costs.

Application of classification by types of production costs will improve objective evaluation of efficiency in the main areas of the enterprise. On this basis, the efficiency can be subdivided into: production efficiency (the ratio of the result with production costs); management efficiency (ratio of results with management costs); investment efficiency (ratio of results with investments); exchange efficiency (ratio of results with sales or transaction costs); efficiency of consumption (the ratio of results with consumer expenditures). Based on this, we believe that managing all the variety of costs should be considered as the main factor in increasing the efficiency of poultry farming enterprises.

At the moment, the scientific literature has a large number of works devoted to the definition, essence, criteria, analysis and forecasting of economic efficiency. However, an in-depth study of the issue of economic efficiency is needed, as well as the development of new methods of evaluation and analysis taking into account the specifics of poultry production.

## **1.2. Structural and functional indicators of the formation of efficiency and competitiveness of poultry enterprises**

The efficiency of farming in poultry farming depends on the quality and competitiveness of products, which are determined by the level of material and technical support, technology of production, processing, packaging, storage and sale of products. Solving the problem of providing the population with poultry products depends on the development of the industry increasing its efficiency. The lack of a clear definition of the category of efficiency leads to the fact that domestic specialists, quoting and complementing each other, try to introduce their own interpretation of efficiency into scientific circulation. However, in our opinion, initially everything depends on what the author considers as an effect.

Most scientists do not make a clear distinction between the different sides of efficiency, but invest in them the same content, operating as synonyms, different names, and reveal in them the essence and understanding of it as a ratio of the effects of economic activity, on the one hand, and different resources or expenditure – on the other.

The effectiveness of poultry production reflects the effect of objective economic laws and highlights the ultimate goal – effectiveness. In assessing the economic efficiency of production and costs I. Ishchenko and S. Tereshchenko, in our opinion, correctly noted that for effective management, it is necessary to determine the criteria for effectiveness. According to their research, the main criteria for effectiveness are effectiveness, efficiency, quality, profitability, productivity [50]. In poultry farming, economic efficiency should mean obtaining the maximum output of products from one poultry head at the lowest cost for the production of a unit of products. For example, the effectiveness of improving the quality of feed is an increase in growth and “ripening” of poultry in a shorter period: from 42-44 to 38-40 days. Consequently, production is

effective only when production volumes exceed costs, resulting in a useful result.

Economic aspects of efficiency are characterized by the economic effect, which means the difference between the cost assessment of results and the cost estimation of total resource costs at all stages of implementation or implementation of measures. From the perspective of the subject of our research, the classification of the effect by the nature of its occurrence and the division into the effect of alignment of the provision of production resources, the effect of optimal provision of resources, the effect of the scale of production and the corporate effect [170] is of the greatest interest.

The effect of aligning the provision of resources (or balancing resources) is achieved by increasing resources, the lack of which limits profit. It is due not only to the fact that the investment in obtaining the most scarce resources provides the highest return on investment, but also to the fact that the alignment of resource security increases the return on resources that are in relative excess, as this relative excess is eliminated at least partially.

The effect of optimal provision of resources is manifested in the event that all production resources are used in the optimal amount. The justification of the need to determine the need for resources is crucial for the processes of creating sufficient reserves of raw materials and necessary materials, determining the optimal size of using different categories of material resources, constant monitoring of sources of external resources for calculating their real value, developing programs for attracting new, more efficient resources necessary in the production process. Any change in optimal resource security leads to economic losses. To some extent, it is a separate case of the effect of alignment of resource security, since the optimal provision of resources provides for such a combination, in which none of them is in excess or deficit.

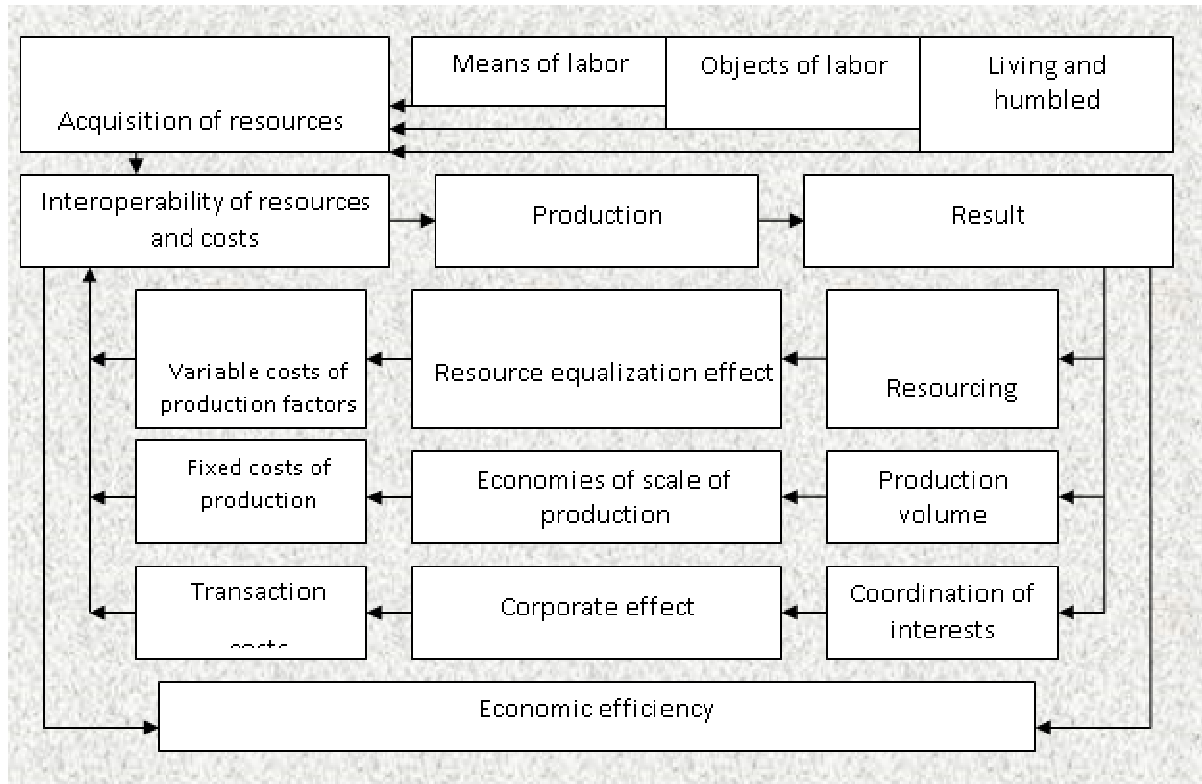
The effect of the scale of production is interpreted as savings, due to the increase in production scales and it turns out to be a decrease in long-term average production costs per unit of production. It is achieved by such an

increase in production volumes, in which specific costs are reduced in the same proportion. Its nature is due to the existence of the so-called constant costs, the absolute value of which does not depend on the change in production volumes. This immutability is relative because when a certain production is reached, the absolute value of constant costs increases, but in the next interval they do not change again, although they can be an order of magnitude more than in the previous interval. In conditions where the scale of production increases faster than the amount of production resources consumed, there is a growing (positive) effect of scale. The coincidence of the growth rate of production volume with the rate of increase in the amount of resource consumption is a constant effect of the scale, in case of lag in the rate of production volume from the rate of resource consumption – a negative (decreasing) effect of the scale.

Corporate effect is achieved by combining common concerted actions and interests. It can be obtained without significant investment and usually depends on the scale of production. The more resources the company manages, the more opportunities for maneuvering in making the optimal decision. In this case, there should be savings on transaction (management) costs, which, first of all, arise in vertically integrated structures, where the exchange of products occurs not spontaneously, but systematically and is reduced to interchange. Increasing the scale of production by incorporating combined production into its composition leads to a decrease in transaction costs. However, in parallel, due to the increase in the size of the enterprise and complications of its structure, management costs begin to increase. Thus, the corporate effect will be achieved when the savings from reducing transaction costs associated with the subsequent increase in production will be equal to the additional cost of management.

The mechanism of interaction of costs and results in the formation of different types of economic effect is schematically depicted in Fig. 1.3. Thus, as a result of the interaction of resources and costs in the production process in accordance with the goal ensures its efficiency.

Thus, as a result of this interaction, various economic effects arise, as a result of which production efficiency is ensured on the basis of cost management: by increasing the scale of production – by reducing the conditional constant costs, which contributes to reducing economic risk and increasing profits; with integration processes – by saving on costs, which accompanies the establishment of mutually beneficial relations of economic agents.



**Fig. 1.3 Mechanism of economic effect and efficiency**

*Source: adapted [76; 84; 93; 138, 170; 185; 200]*

In terms of the cyclicity of the production process of the enterprise, the efficiency is continuous, the level of which is determined on the basis of the ratio of costs and results and is adjusted depending on the goals of the enterprise by influencing the costs of living and recovered labor, resources that express the achieved level of production efforts and the degree of their use. The above definitions of efficiency and the classification of the effect by the nature of its occurrence do not cause doubt, but they are given in the economic literature in some cases without taking into account the fact that in the interpretation of this

economic category there should be a different approach that goes beyond the generally accepted content of efficiency as an economic category.

The team of authors [196] notes that efficiency in relation to the enterprise includes at least two parties:

- efficiency of the main activity, i.e. efficiency, estimated by the costs and results of production and economic, financial, marketing and other activities. Traditional indicators for comparing costs and results are used here;

- efficiency of the enterprise management system, i.e. management efficiency. Here the indicators are mainly of high quality character.

Thus, in the course of their activities, each enterprise solves two main tasks that contribute to increasing their economic efficiency. One is to achieve the maximum effect at the planned cost level (usually in conditions of limited resources), and the other assumes the achievement of a given effect at minimal cost.

Summarizing the research, we can conclude that efficiency is a very complex and multifaceted economic category, which reflects the degree of use of resources and facilities that are at the disposal of the enterprise. It is determined by the ratio of the economic effect to certain expenses or resources that were spent to achieve it. Within the framework of a costly approach, the economic effect is correlated with the costs in general, and within the resource – with the costs of certain types of resources (material, labor, financial).

The extension of the concept of efficiency and the allocation of two approaches in it was designed to reflect the attitude of different aspects of the enterprise: the result and costs, result and goals, result and needs, result and values. And, if within the framework of the first approach to the interpretation of efficiency it is justified to apply the concept of effectiveness, then in the second case the concept of economics is used, which allows to give a characteristic of efficiency from the position of the ratio of the value of the result to the value of costs [179].

The main criterion for the economic efficiency of any production is the ratio of the resulting effect and the incurred costs for its achievement. This criterion acts as a reference point when choosing the most rational options for the use of resources and is manifested in increasing the production of consumer values on the basis of rational use of production resources and increasing productivity. Based on the fact that the ultimate purpose of production is consumption, which is carried out at the expense of national income, the criterion of economic efficiency of production should be considered the amount of national income per capita and its maximization at the lowest cost of means and labor.

The criterion for social efficiency is to achieve the optimal standard of living of the population. The aggregate efficiency criterion expresses the maximum possible production of high quality products per unit of used raw materials or production capacity and obtaining from its sale such an excess of income over costs, which would allow to provide expanded reproduction, solving social problems, the most complete satisfaction of demand for manufactured products, increasing market share and the cost of the enterprise. For example, in the field of poultry, the criterion of economic efficiency manifests itself in increasing the production of clean products at the lowest cost of means and labor on the basis of rational use of material and labor resources, and as a result of the resulting effect from production there is a volume of gross products without consumed means of production (depreciation deductions, the cost of feed, etc.).

As you can see, some scientists define efficiency as the ratio of result and cost, while others associate efficiency with effect, while treating the effect as some form of result. In our opinion, to relate the concepts of “efficiency” and “effectiveness” is not quite correct, since effectiveness is to achieve a certain result that can be both positive and negative, and “efficiency” is always a positive value that characterizes the increase in results in relation to the means associated with their achievement. In other words, the effectiveness reflects the

degree of achievement of goals, and effectiveness indicates the degree of effectiveness of the enterprise. To properly understand the concept of “efficiency” it is necessary to consider different approaches to the disclosure of this category [111].

Studying the concept of “efficiency”, as the effectiveness of a certain process, scientists pay attention to the fact that in practice it is important to determine what costs to compare the result obtained for effective production. At the same time, scientists recommend three fundamentally different approaches to solving the problem: resource, when the effect is compared with the cost of production resources (main and working funds); costly, when the effect is compared to the current production costs; resource-expendable. We agree with the opinion of these scientists that to determine the most acceptable economic efficiency is a resource-cost approach, which is based on the comparison of the economic effect with production resources and production costs [45].

In particular, A. Voronkova proposes to evaluate the effectiveness of real production costs. At the same time, she believes that efficiency should be determined by the profitability of assets, the profitability of own and borrowed capital [25]. Author proposes to determine the effectiveness of advanced and consumed resources, as well as the turnover and profitability of funds or their sources [62]. V. Andreichuk concludes that efficiency is advisable to determine the profitability of the capital used, and in the case of attracting borrowings, financial costs (interest) should also be taken into account. Profit to determine profitability should be taken here the one that remains at the disposal of the enterprise, that is, net [4].

V.Pryadko considers economics one of the main criteria for assessing the activities of enterprises in the market economy. Under economics, the author understands obtaining a certain result at the lowest cost or a given cost. The main indicators of enterprises in market conditions, he calls financial stability and profit (profitability). Moreover, under the latter, the author understands the

profitability of his own capital and the profitability of the entire capital invested in the enterprise [132].

Based on the classical methodology of economic research, the essence of economic efficiency in poultry farming should be considered as an increase in the volume of production of poultry products of high quality and maximizing the profit from its sale per head of poultry, while minimizing labor, material and financial costs for the production of each unit of products, taking into account the interaction of internal and external factors of production [114].

Efficiency at the enterprise level characterizes the relationship between the value of the result (effect) of its activity and the number of invested or spent in the production of resources. The process of measuring the expected or achieved level of efficiency of the enterprise is methodically connected, first of all, with the determination of the proper criterion and the formation of the appropriate system of indicators [119].

To determine the efficiency is very often used performance indicator. The latter is the most important indicator of economic growth, generalizing the concept of labor effectiveness. Features of the modern stage of economic development determine new approaches to the evaluation of economic activity, including the problem of productivity. There are different sources of productivity. One of them can be considered the efficiency of using production resources for production.

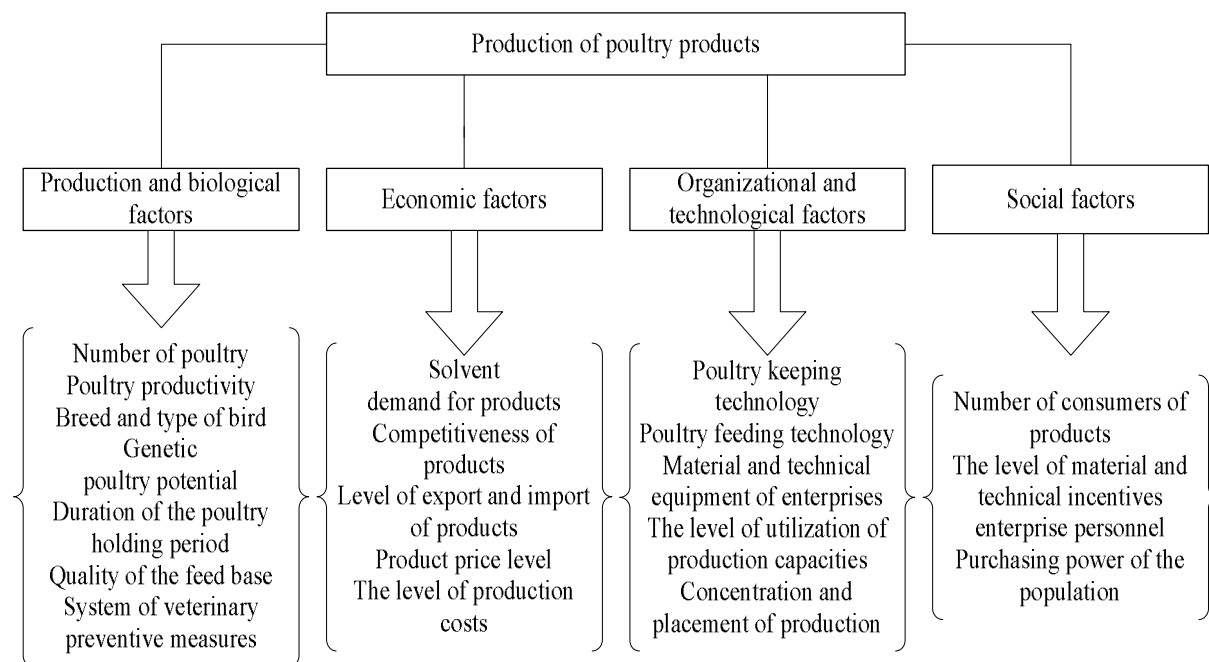
In addition to productivity, economic efficiency is also determined by the cost of feed for the production of a unit of products, labor costs, the cost of a unit of production and the level of profitability. To increase the volume of poultry production, it is necessary to take into account the costs of poultry maintenance, the growth of its productivity, the costs associated with the use of production resources to improve the quality of products.

The efficiency of production is influenced by a set of interconnected factors that determine the conditions of its development and ways of increasing. Therefore, analyzing the economic efficiency, it is necessary to use a set of

indicators, as well as take into account the impact of various factors that are related to each other, and the criterion by which the actions of economic laws will be reflected. One of the main criteria for the economic efficiency of poultry farming is a high daily growth of poultry, which accelerates its ripening in a shorter period, as well as the carrying capacity of poultry.

According to V. Diesperov, the size of production along with its intensity is the decisive factor of efficiency in agriculture. After all, the intensity of production is at the same time a measure of its capacity, a factor of overall efficiency. The volume of poultry production depends on the system of interrelated factors (Fig. 1.4), which in turn have a significant impact on increasing the efficiency of the industry [38].

The results of the research indicate that the main factor in increasing the volume of poultry production in modern conditions is the growth of poultry productivity. No less important is the increase in the livestock of the poultry. The fact that the intensive factor in the development of poultry farming largely affects the increase in production volume, we evaluate positively.



**Fig. 1.4 Factors that affect the volume of poultry production**

*Source: Own research*

Market conditions also have a significant impact on the development trends of the industry. When it comes to efficiency, this factor characterizes the change in the final useful effect from the use of means of production and living labor, the return of aggregate investments. Factors associated with progressive forms of organization of public production include specialization and concentration. The level of specialization of the enterprise depends on the productivity, the cost of production, which in turn depend on the intensification of the industry, the organization and remuneration of poultry workers, the cost of feed, the feed production system, the organization of breeding work, etc.

The specialization of production creates conditions for increasing its concentration to rational sizes, allows us to concentrate the production resources of farms that are limited in the leading industries that best combine with each other. Concentration also involves the concentration of means of production, labor, the volume of production of certain types of products in one enterprise, which leads to an increase in their size [85].

Specialization of the poultry industry is a multi-plan process that develops in several directions. Specialized enterprises for the production of poultry and eggs were established in Ukraine. The share of these enterprises increases every year. Creation of specialized associations takes place on the basis of further development of existing and newly established enterprises. As a basis in these associations take technical and technological project. This is a consolidated model of organically interconnected typical solutions and regulatory materials on the organization of production, labor and management.

Concentration in poultry farming at the present stage is formed in various aspects: in the division of labor between farms, in the deepening of their specialization in production or the execution of various stages in the technology of production. A high level of concentration and use of modern technologies makes it possible to provide a high level of profitability (more than 65%), due to a decrease in the level of full cost and an increase in the purchase price, which is characterized, first of all, by high quality of final products, as well as by high

productivity of laying hens. But, as you know, the high concentration of poultry in a limited area leads to an exacerbation of environmental problems. Therefore, it is also necessary to pay great weight to the disposal of waste, the main of which is litter.

A characteristic feature for the production of poultry products is its seasonality. Mostly this applies to the production of eggs. However, in agricultural enterprises that use intensive technology, its manifestation is insignificant. In personal peasant farms, the seasonality of production is clearly manifested, which is primarily due to the lack of premises for year-round maintenance of laying hens. The seasonality of the proposal caused by the prevailing production of eggs in the regional market by private households. Applying the synchronomarketing strategy, increasing the supply of its products in the autumn-winter period, agricultural enterprises can smooth out the seasonality of the offer during the year, thereby ensuring a higher level of profitability of production and successful sale of their products with less effort for commodity growing. According to poultry companies, the cost of producing eggs in winter is 1.3 – 1.5 times higher against similar costs in the summer months, the seasonal fluctuation in product prices is 1.8-2 times. Cheap summer products often turn around for poultry farms with losses, and costly winter products are profitable.

The efficiency of poultry farming is ensured on the basis of advanced reproduction through the introduction of advanced technologies, the use of innovations and vertical integration, which significantly reduces the cost at the entire stage of commodity movement from the manufacturer to the final consumer. Thus, unprofitable production is observed in poultry enterprises with a production volume of up to 10 million pieces, most of which function as independent business entities.

Vertical integration helps reduce costs and reduce dependence on current temporary changes in the market conditions. Vertical integration involves combining raw materials, processing and sales activities in a single

organizational and technological complex. It is obvious that the prospects of the poultry industry of Ukraine for the development of large industrial integration formations that will be able to provide effective work on the basis of a closed technological cycle according to the scheme: the maintenance of the parent herd in poultry products, the production of feed and preparation of feed mixtures at their own feed plants, the production of meat and egg products, its processing, logistics and sales organization. Only in this case the company will be able to achieve high results of production activity.

Also, the formation of the efficiency of poultry enterprises depends on the breeding of linear and hybrid poultry, which is marked by high productivity. Part of the success of the industry is genetics and selection, modern scientifically grounded level of feeding and maintenance of poultry, high veterinary protection and labor organization. The progress of the industry is significantly related to the rational use of the world gene pool, increasing the genetic potential of poultry. Industrial technology of production of poultry products puts increased requirements for the genetic qualities of poultry. The breeding and genetic center bred high-performance crosses of egg chickens, the potential carrying capacity of which is 350-360 eggs per year. Chickens of these crosses are characterized by a high level of preservation of young and adult birds in intensive conditions of detention.

The theoretical provisions of the theory of competition and competitiveness of the enterprise constitute a fundamental basis for the formation of the methodology of evaluation and improvement of economic efficiency, in particular in the field of poultry farming. For modern poultry enterprises operating in a highly diversified and dynamic market environment, it is especially important to apply a systematic approach that provides not a fragmentary, but a comprehensive analysis of all factors that affect the effectiveness of their production.

The process of economic efficiency formation in poultry farming is largely related to the ability of the enterprise to create and maintain competitive

advantages. In this field, they have a specific content and are manifested through: increasing the productivity of livestock based on genetic potential and optimizing feeding; use of energy-saving and automated poultry breeding technologies; improvement of the system of veterinary and sanitary control and biosafety; effective organization of production processes, logistics, sales and processing; ensuring stable quality and safety of products in accordance with international standards.

In this context, competitiveness in poultry farming appears not only as a property of finished products, but as a comprehensive indicator that reflects the effectiveness of the use of resource potential, the innovativeness of production processes and the ability of the enterprise to adapt to fluctuations in the market situation. Therefore, the economic efficiency of poultry enterprises is determined through the interaction of such elements as the cost of production, labor productivity, the level of technological equipment, managerial efficiency, as well as the quality composition and structure of competitive advantages.

The more sustainable and diverse the competitive advantages of a poultry enterprise are, the higher is its level of economic efficiency, which is reflected in the ability to ensure stable financial results, increase profitability, expand market share and ensure innovative development. In modern conditions, they become determining factors not only of the economic, but also of the ecological and social components of the industry's efficiency, as they take into account the requirements of sustainable development, biosafety, animal welfare and meeting consumer demand.

Thus, the theoretical aspects of the formation of the economic efficiency of poultry enterprises should be considered in close relationship with the theory of competition, since it is the competitive advantages that provide the enterprise with the opportunity to achieve higher production and financial indicators, optimize costs, improve product quality and ensure sustainable functioning in the long term. As a result, competitiveness appears as an integral manifestation

of economic efficiency, which determines the ability of the poultry enterprise to successfully compete, adapt and develop in market conditions.

The most important indicator of the competitiveness of an economic object of any level is "... the presence of competitive advantages, that is, qualities that are absent or less expressed in rivals" [206]. Competitiveness factors determine those competitive advantages of the enterprise that are used by the enterprise to increase (or maintain) its level at a certain time and in certain market conditions [207]. The system of competitiveness factors represents the set of competitive advantages of an enterprise that determine success in competition [208-210].

According to the theory of M. Porter, competitive advantage is maximum efficiency resulting from differences in actions performed, from persistently higher prices, persistently lower costs, or a sustained combination of both. An advantage is an efficiency advantage with respect to other companies in the same industry. The system of determinants of competitive advantages, reflecting the basic "platform" of the activity of business entities, decisively determines the choice of the company's position in the industry. The strategy of this choice, according to M. Porter, has at its core an analytical assessment of competitive advantages, carried out in two directions: due to lower costs and differentiation of goods. The existence of said advantages conditions the field of competition [211].

The choice of the first way (cost savings) involves the ability of the enterprise to produce and sell products with lower costs compared to competitors. Another way (differentiation) boils down to the constant search for opportunities to provide consumers with products of new quality. However, in our opinion, the third way is more successful – the desire to advance in both directions. This is a complex, time-consuming task, although in any case it has to be solved by every enterprise. Indeed, by focusing on cost savings, the company must, at the same time, provide its products with acceptable quality, and guarantee customers the necessary level of service. If the enterprise creates

differentiated goods, then their price should not exceed the limits at which the demand for the mentioned goods decreases. Each enterprise is unique in its own way, and its market positioning corresponds only to it alone with an inherent combination of strategic ideas [212]. At the same time, the choice of strategy, taking into account the conditions of the economic environment and the amount of resources available to the enterprise, depends mainly on whether its business is standard or specialized.

It is important to emphasize that cost-effectiveness assessments make scientific and practical sense only if enterprises operating within the same industry are comparable [224]. This is explained by the fact that competitive forces are manifested precisely at the industry level, forming a space in which competitive advantages are created, realized or lost. Therefore, the analysis of the efficiency of poultry enterprises requires a comparison of their production, economic and technological indicators with other subjects of the poultry market, which allows determining their real competitive position and ability to ensure sustainable development.

Regional operating conditions, which determine resource opportunities, agro-climatic potential, market infrastructure and features of state regulation, have a significant impact on the level of economic efficiency and competitiveness of poultry enterprises. Key factors of regional differentiation in poultry farming include:

- the regions of the state have different economic potential and different resource-reproducing opportunities for the development of the agrarian sphere of the economy. The strategic change in the international vector of the country's development contributes not only to changing the territorial orientation of financial, investment and commodity flows, but also to strengthening the regional differentiation of markets;

- the state of solvent demand plays a decisive role in the formation and development of competitiveness. In Ukraine, there is a significant uneven income of the population by region, which determines various opportunities for

the sale of poultry products and complicates the universal planning of production and sales;

- strengthening specialization is based on different levels of socio-economic development of territories, unequal provision of material and technical base, availability of market infrastructure (commodity and stock markets, logistics centers, transport hubs), as well as on climatic, demographic and educational and cultural features. In poultry farming, these factors determine the type of production (meat, egg, mixed), the choice of breeds and technologies.

Considering the peculiarities of competition in the agricultural sector of the economy, a number of authors single out the following: “inconsistency of supply and demand for agricultural products; non-fulfillment of the function of stimulating the development of production and scientific and technical progress, which is due to the lack of competition from commodity producers for the sale of products; in the agricultural sector, the coordination of production cannot be carried out only by taking into account price fluctuations under the influence of supply and demand, state regulation is necessary” [222].

All this shows that the competitiveness and economic efficiency of poultry enterprises are formed not only by internal factors (level of technology, cost, productivity, product quality), but also by the external environment, where regional features, infrastructure capabilities, the state of markets and state policy play a decisive role. Therefore, the theoretical aspects of efficiency in poultry farming cannot be considered separately from the regional context and mechanisms of competitive interaction, which determine the real conditions of management and the development potential of enterprises.

The specified regional, institutional and market features directly affect the nature of the competition of business entities, forming boundaries and limitations regarding the opportunities of each enterprise to occupy the most favorable competitive position. This, in turn, necessitates the identification of several evolutionary types of results of the development of the competitive environment in the agricultural sphere.

The first evolutionary type assumes the relative instability of the competitive positions of market subjects, when no participant is able to maintain a dominant position for a long time due to the constant pressure of direct competition. In the poultry industry, this is especially evident: if two or more producers of homogeneous products (for example, chicken meat or eggs) operate in a certain segment of the market, none of them can become a monopolist. Even in the structure of the oligopoly which is characteristic of the modern poultry market, each participant is constrained by the capabilities of the others and therefore cannot easily obtain a dominant position with regard to its competitors. Even if one of the undertakings manages to strengthen temporarily its competitive position, this requires the continued maintenance of advantages – technological, price, innovative or marketing – in order to maintain a sustainable market share [206].

Barriers to competitive positioning arise in cases where one or more direct competitors pose a threat of consumer attention and form the possibility of reorientation of demand for their products. For poultry enterprises, such barriers are especially important, since the market of poultry products is characterized by high sensitivity to quality, freshness, compliance with veterinary regulations and price availability. Competitive enterprises can form such barriers through several mechanisms, among which the most common: offering products of higher quality or more convenient for consumption, in particular packaged, chilled, organic or with improved consumer characteristics; operational differentiation of the assortment, which is manifested in the flexible expansion or narrowing of the product line in accordance with the market situation (for example, the introduction of new types of poultry processing products); more effective interaction with consumers, which includes not only competitive prices, but also loyalty systems, marketing promotions, flexible discounts, bonuses, etc.; the formation of stable consumer interest in the brand through constant presence on the market, active advertising activity and quality stability,

which leads to a certain “conservatism” of consumer preferences and makes it difficult for buyers to switch to competitors’ products.

For poultry enterprises, such barriers are critical, as the industry operates in conditions of high cost, dependence on the feed base, energy resources, logistics and veterinary risks. The ability of the enterprise to form its own competitive barriers directly affects its economic efficiency, as it creates stable sales and reduces market uncertainty allows better planning of production costs and financial flows.

As a result, competitive interaction in the agricultural sector, and especially in the field of poultry farming, not only determines the position of the enterprise on the market, but also acts as an important factor in the formation of its economic efficiency. An enterprise’s ability to strengthen its competitive position – through product quality, innovation, cost reduction, management improvement or market infrastructure development – directly affects its ability to deliver high economic results in a dynamic and often volatile market environment.

Competitive struggle on the market, erecting barriers by competitors has various consequences on the economic activity of enterprises. Their understanding determines the second type of evolutionary result of restrictive practice, which consists in the formation of an entrepreneurial environment as an association of different companies. The entrepreneurial activity of poultry enterprises has differences due to the specifics of the industry and a number of features, so some types of entrepreneurship are formed due to the attraction of large-scale investments and a high-tech production base, others are based on individual activities and primitive technological equipment. Professional features in economic activity determine differences in the methods of organization and management of the enterprise. Therefore, the definition of an enterprise as small or large is based on the recognition of its economic activity as effective. At the same time, the following trend should be taken into account. Each type of entrepreneurial activity is always unstable, meanwhile, the

classification of enterprises according to their size is stable. Any agricultural enterprise – small, medium or large – can be recognized as competitive according to the peculiarities of entrepreneurial activity, which is traditional for it (internal factors), and the market where it sells its products (external factors). The distribution of business entities according to the size criterion is the most frequently used in modern practice, which emphasizes the importance of this evolutionary effect. The distribution is based on quantitative criteria for determining competing entities. Accordingly, the generalizing concepts of large, medium and small enterprises have become widespread in world practice. Thus, in EU countries, the criteria for determining the size of an enterprise are the number of employees and annual turnover [214].

In Ukraine, small enterprises, including micro-enterprises, medium and large enterprises are distinguished according to the size criterion. The criterion for assigning an enterprise to this category is the number of employees at the enterprise and the amount of income received from the sale of products (works, services) for the financial year [225]. The size of the business entity affects the peculiarities of competitiveness. Yes, large enterprises have competitive potential and a sufficient level of competitiveness in the field of large business, but they are not sufficiently competitive in small business, on the contrary, the competitive advantages of small enterprises are manifested only in small business.

Under the condition of large-scale production, in contrast to small-scale production, the unit cost of sold products decreases with an increase in the volume of its sale, that is, an effect of scale is achieved. If this process does not occur, then the phenomenon of negative scale effect occurs. Competitiveness by large-scale agricultural enterprises is achieved by economies of scale, which allows you to manufacture and offer your products at more reasonable prices and capture new market segments and expand market “niches”. Domestic economies of scale occur when large-scale agricultural producers manage to achieve more efficient use of production factors, and the increase in sales

volumes allows to cover the increase in costs for marketing, financing and production development.

Internal losses on the scale can arise as a result of the fact that, increasing the optimal volume of sales of agricultural products, large-scale agricultural enterprises are forced to disproportionately increase and retain a large number of administrative employees. External economies of scale arise as a result of the wider application of innovation by enterprises. An enterprise with an optimal level of production concentration (other things being equal) can function more profitably and be competitive. At the same time, the distribution of business entities only by size is one of the ways to evaluate the results of the construction of mutual marginal barriers of competitive positioning by various enterprises. At the same time, it is necessary to take into account that the dimensions of the enterprise are not exhaustive when determining their real competitive potential, the activity of the subject in relation to the external environment and the nature and degree of stability of their competitive positions. Large companies may well be uncompetitive, relatively weak and unstable compared to medium-sized enterprises, and small companies may win the fight against large and medium-sized enterprises that have much greater production potential.

In this case, the evolutionary result of the third type, which consists of intraspecific functional differentiation of enterprises, should be considered. Differentiation is a direction of the development process associated with division, demarcation of the whole, which is divided into parts, degrees, levels. Structural differentiation is differentiation during which subsystems implementing certain functions are distinguished in the system. Functional differentiation is differentiation in which the range of functions performed by elements of a system during its development is extended [209]. From the standpoint of a separate enterprise, it is about the presence within a single type of business entities of some subspecies that have common differences, which are due to the disparity of their entrepreneurial functions, and not about differences in the choice of directions, types, forms and methods of competitive actions. The

disparate functions of business entities in the process of production and other types of activity serve as the basis of other approaches to their classification, which, along with the quantitative characteristics of enterprises, also take into account qualitative characteristics.

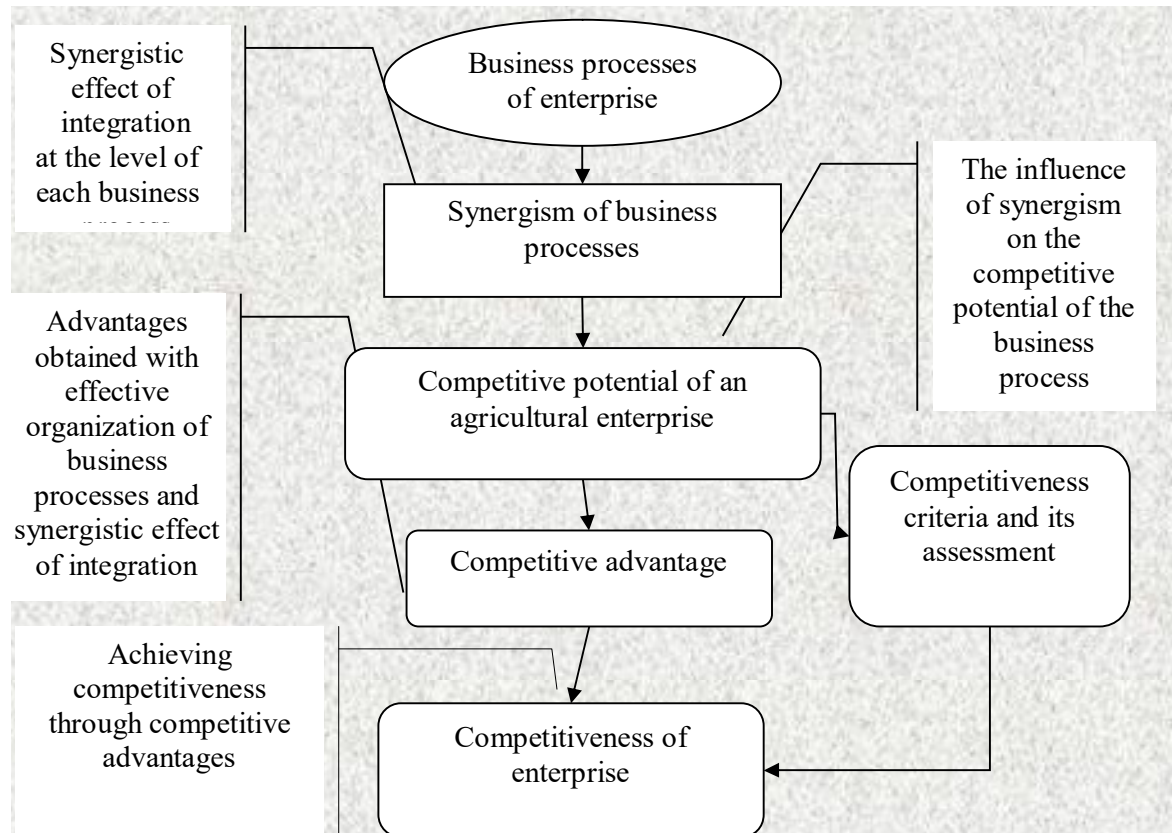
Differentiation of business entities according to different characteristics of objects can act as a principle of distinguishing enterprises according to different criteria. For example, the criteria for large-scale are quantitative (number of employees employed, volume of sales, book value of assets, annual income, volume of investments, etc.), qualitative (number of products produced, amount of resources, developed management systems, systematic management, etc.), economic (sales markets, legal independence, etc.) and statistical indicators (contribution to GNP, development of innovations, etc.). Differences between competitors are determined not only by the strength or weakness of the enterprise, but also by the unevenness of the functions performed, which creates a basis for the formation of differentiated approaches to the management of economic efficiency and competitiveness in poultry[206].

Currently, the processes of accelerated formation of integration agro-industrial structures are intensifying in the agricultural sphere of production. Active integration of production in the industry affects the indicators of competitiveness of enterprises and determines a new round in the development of competitive advantages. The main goal of the formation of integrated business structures is to increase the efficiency of enterprises and obtain a synergistic effect. The need to create integrated structures is associated with ensuring security, solving the problem of financial deficit, increasing the competitiveness of enterprises and obtaining tax preferences.

Among the motives of integration are the insufficient efficiency of enterprises, the possibility of obtaining operational and financial synergy, redistribution of resources and diversification, ensuring liquidity by informing the market, monopoly. Estimates of the significance of individual motives for integration show that factors such as “market share expansion”, “entering new

markets”, “diversification” and “scale effect” among others are dominant [216; 217]. The listed factors are a prerequisite for the formation of certain competitive advantages in integrated structures and the potential for increasing their competitiveness. Synergism is that “charming combination of activities that amplifies each of them, and together they generate more profit than individually”; management synergism represents the socialization of skills, activities, resources or competencies [217; 218].

Based on the results of the study, an algorithm for the formation of the competitiveness of agricultural enterprises was developed by transforming the synergistic effects of integration development at the level of business processes that provide competitive potential and their competitive advantages (Fig. 1.5).



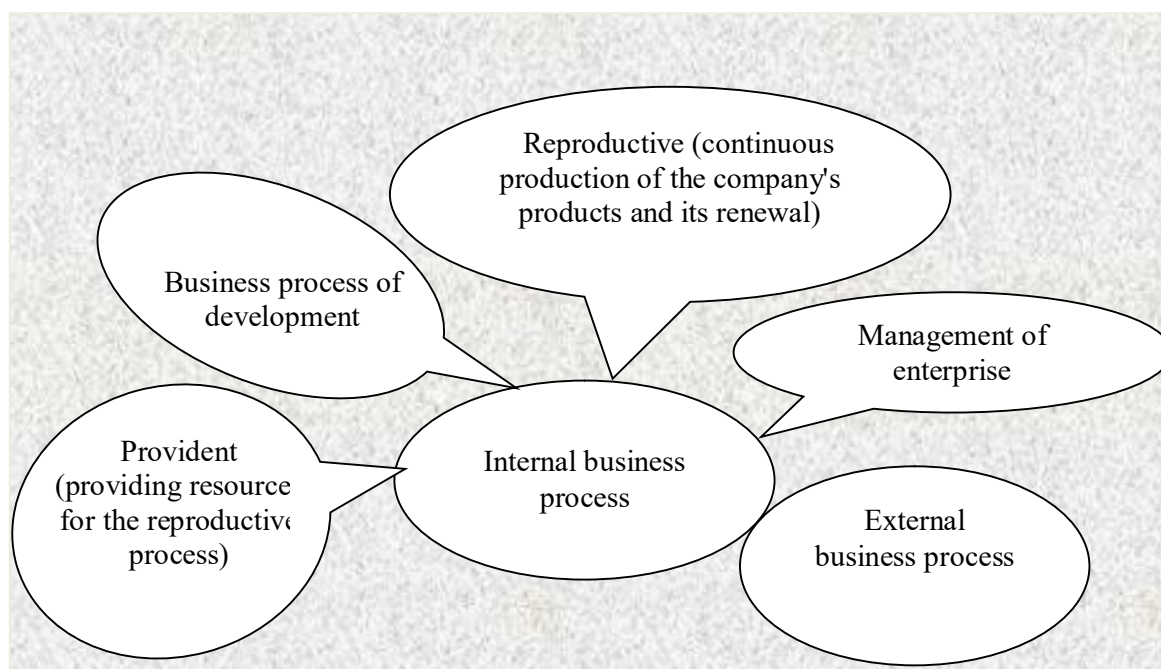
**Fig. 1.5 Algorithm for the formation of competitiveness of agricultural enterprises**

*Source: own research*

The algorithm for the formation of the competitiveness of agricultural enterprises is a stable consistent relationship between the economic and

managerial categories “business process of the enterprise” – “synergism of the business process” – “competitive potential” – “competitive advantages” – “competitiveness of the enterprise”.

Synergism of management affects the competitive potential that is characteristic of a certain business process, and the competitive advantages that are obtained with the effective organization of the business process and the synergistic effect of integration. We believe that the business processes of the enterprise will be divided into: managing, operational, supporting (supporting, resource, production-technological, effective). Their research consists of several stages and is aimed at identifying, optimizing and further managing them. Let’s make a decomposition of the “Business processes of the enterprise” block by detailing its components and internal connections (Fig. 1.6).



**Fig. 1.6. Decomposition of the business process within the framework of the formation of the competitive potential of an agricultural enterprise**

*Source: own research*

The synergistic approach to managing the competitiveness of agricultural enterprises provides an opportunity to understand the sources of the formation of competitive advantages in the form of synergistic effects and to manage the strengthening of synergism to increase their competitiveness, to systematically

investigate competitive ones advantages, take into account the specifics of agricultural enterprises and the influence of the external environment. The synergistic approach provides a holistic, multidimensional and non-linear understanding of increasing the competitiveness of agricultural enterprises due to the synergistic effects of integration development.

At the first stage of the formation of the competitive potential of a poultry enterprise, it is necessary to determine the factors of competitive potential and carry out their classification in accordance with the needs of the management process. Factors of the competitive potential of the enterprise have a high degree of interdependence and interdependence, therefore local diagnosis of individual factors does not give the maximum possible result due to the high importance of synergistic connections and complicates the process of their management. The possibility of obtaining a positive result is determined not only by the reserves of each individual factor, but also by their systemic management in order to adapt to changes in the external environment.

The matrix for creating such a toolkit can be formed at the initial stage of diagnosing the competitive potential of a business entity and forecasting the dynamics of its changes. The interpretation of the category of potential has a certain differentiation of its essence depending on the research methodology. A resource approach to determining potential is inherent in the research of Western authors [219; 220]. Thus, a number of researchers reveal economic potential through the resource concept and note that “resources are all assets and opportunities that are directly or indirectly available to the firm, giving it the opportunity to develop and implement a strategy that leads to sustainable competitive advantages” [213]. In the definition of this category, two determinants are common, namely: resource and capabilities. The first (resource component) is most often covered by scientists, and the possibilities of potential are a probabilistic component, which is quite difficult to accurately determine, let alone quantitatively.

Let's consider the properties of economic potential in more detail. As part of the company's assets, two groups are distinguished: the first – factor assets (production, financial, labor), the second – process assets, which are related to the organizational element. Taking into account the distribution of the potential of the economic system according to these criteria, we agree that the so-called “process assets” unlike the factors of production cannot be acquired by buying and selling on the market. They are formed in the process of forming an intra-company management culture that establishes connections with suppliers, sales networks, consumers, and other counterparties. These assets for each enterprise are unique, unrepeatable and cannot be reproduced in full. This group of assets can include cooperation with competitors, enterprises at different levels of associations (for example, vertical integration of agricultural and processing enterprises), as well as the use of production and management technologies and mechanisms. Researchers identify the part of the potential responsible for opportunities with knowledge, skills and experience as the most difficult-to-reproduce element of the potential. At the same time, the place of this component in the total potential, its relationship with the resource part and as a result of which actions it can appear and be implemented is not indicated. We agree with the opinion that knowledge and experience are heterogeneous concepts and cannot be independent components of the company's potential, although in certain areas they act as a resource part.

In agricultural enterprises, knowledge, skills and experience form organizational mechanisms and separate tools, the main purpose of which is the optimal combination and transformation of assets to contribute to the achievement of the highest level of realization of the total potential of the system. Regarding fundamental knowledge, they belong to the resource component of the potential, as they ensure economic activity in the presence of the necessary tools.

Competitive potential occupies a special place in the system of socio-economic potential. The specificity of this concept is due to the fact that, unlike

other similar categories, the dynamism of the competitive potential has a dual origin. Based on the etymology of the word, the potential of the system is a relative phenomenon in its essence, simultaneously a carrier of resource and instrumental components. The latter characterizes the system's ability to transform resources into capabilities that reflect the maximum possible level of their use for this system. These components determine the relativity of the potential category and are the source of its internal dynamics. At the same time, the internal structural complexity of competitive potential increases relative to other types of potential due to the dynamism of competition in the industry.

A number of researchers note that the competitive potential of the enterprise reflects the presence of opportunities for the formation of long-term competitive advantages, which ensure the implementation of a competitive strategy and at the same time create conditions for the development of the enterprise and the improvement of competitive conditions in the future [221]. They divide the competitive potential into an internal component (allocation), which is a set of material resources, fixed assets, financial resources, information and labor, and an external (adaptation) component, which ensures the stability of the enterprise in the conditions of an unfavorable competitive environment and realizes opportunities by attracting the opportunities of other market participants. Their external competitive potential is highlighted as part of the overall competitive potential, and this can be agreed. However, the need for such a distribution is not entirely clear, since external factors can be used to form the capabilities of the resource system of a specific object under the influence of external factors.

In the potential assessment study, the concept of "internal potential of the enterprise" is put into circulation, which includes four strategic variables: resources, organizational culture, competitiveness of the enterprise and competitive position [223]. According to his definition, "as indicators when analyzing the competitive potential of a firm, the following are used: a list of competitive advantages, the possibility of changing the development strategy at

a certain point in time, the possibility of current adjustment of the strategy in accordance with changes in the industry, comparing the firm with its more successful competitors in relation to key factors – price, quality of goods and services, technologies, qualified labor force, etc”. In his study, the meaning of the very concept of competitive potential is not revealed, and the term is used as an auxiliary when determining the competitiveness of the enterprise as one of the factors that forms the internal potential of the enterprise. In our opinion, there are certain inaccuracies of a methodological nature in this, since the competitive potential cannot be part of the internal potential of the enterprise, since its formation is determined by external, including institutional factors.

Scientists also explore the category of competitive potential in the context of strategic firm management, where it is seen as a set of – on the one hand, competitive advantages over other organizations in the industry, and on the other – opportunities to use these advantages in the future to ensure a stable position in the market [309]. In research, the basis of competitive potential as a system is the advantages of the internal environment. The work notes the peculiarities of defining this category, firstly, competitive potential is considered as a system; secondly, its composition includes a subsystem of competitive strategies as a structural element in the internal and external environment. However, this statement cannot be fully agreed with, since in business practice, a competitive strategy is a tool for forming and realizing potential.

In the work of outstanding scientists, the main emphasis is on the “resources-opportunities” approach. They note that “...competitive potential includes the totality of available natural, material, labor, financial and intangible resources and opportunities of objects and/or economic entities that allow them to obtain competitive advantages over other market participants” [224]. Based on this interpretation of the potential, its resource part is meaningful, and such an element as “competitive opportunities” is not interpreted quite clearly, since the concepts of “resources” and “opportunities” are identified at the same time, and then on this basis they move to the category of “competitive advantages”.

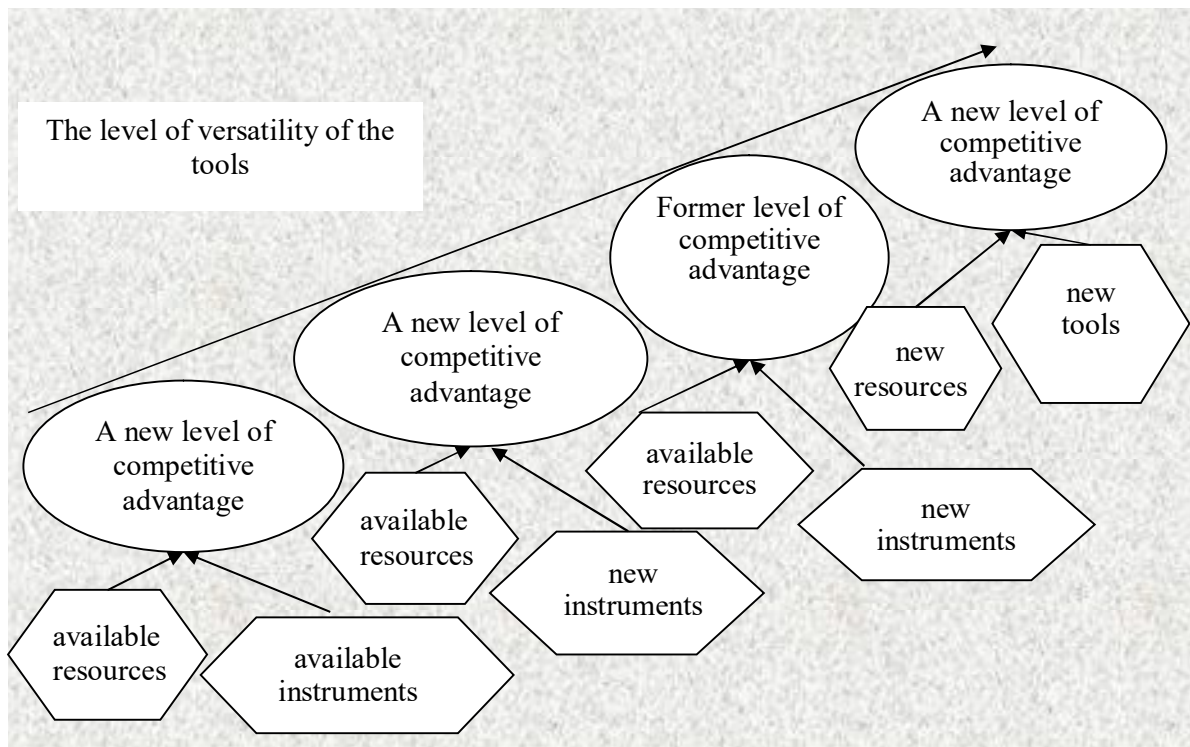
The authors reveal the cause-and-effect relationships between competitive potential, competitive advantages, and competitiveness, emphasizing that potential determines the opportunities that resources are based on. Effective use of resources forms competitive advantages, and competitiveness is a consequence of achieving advantages. However, in our opinion, based on the interpretation of potential as a unity of resources, transformation tools and the opportunities formed by them, it is not entirely appropriate to claim that competitive potential determines the competitive capabilities of the firm (that is, the general determines the partial). Therefore, competitive potential does not determine opportunities, but forms the competitive advantages of the system. Investigating the structure of competitive potential, the authors identified internal potential, which is formed from resource, marketing, creative and innovative, as well as external – market potential [223; 225].

Potential opportunities are a derived structural component of competitive potential and represent the maximum achievable level of resource use with the help of available systems of tools and mechanisms for their transformation.

The main elements of competitive potential are resources and tools and opportunities that allow you to use these resources to achieve the set tasks in a certain economic center. Therefore, according to the approach proposed, the transformation of resources into opportunities is carried out with the help of the interaction of certain tools and mechanisms, under the action of which the function of resource utility for a given competitive system becomes non-zero. Only under the influence of these tools are resources available for combination and reproduction, that is, they can be used by the system to achieve certain goals. The absence of these tools and mechanisms, or their inconsistency with available resources, even with common availability, that is, the tools and resources of the system create non-intersecting areas, actually means that the system does not have the appropriate capabilities, and its potential in this area is zero.

Taking into account this circumstance, the structural allocation of the block of tools and mechanisms for the use of resources allows, on the one hand, to establish an internal logical and meaningful connection between the resources and capabilities of the system, and on the other hand, to develop mechanisms for the formation and implementation of the corresponding potential in the context of goals and objectives of strategic planning. Tools include: knowledge; experience; skills, i.e. applied system knowledge that has a cognitive or social origin, i.e. communicative interaction, management culture, etc. Tools, which are united by the internal logic of interaction, single goals and objectives, form mechanisms aimed at changing system resources to create opportunities in one or another area. Technologies of any kind and type are the main mechanisms for transforming resources into opportunities, as they are based on knowledge about how to transform resources. An important point is that fundamental knowledge, unlike applied knowledge (explicit and implicit), is not tools, but resources, as it has an indirect influence on the processes of socio-economic transformations.

Tools and mechanisms can be both traditional, that is, those that are used to solve standard problems based on available resources and unique, that is, they have different origins and degrees of manifestation. Unique components of competitive potential (resources, tools and mechanisms) form the key competencies of the firm depending on the level of universality of the components (Fig. 1.7).



**Fig. 1.7 The level of uniqueness of tools for using resources of competitive advantages**

*Source: own research*

Thus, the appearance of new resources for it in the system makes it necessary to develop new tools and new mechanisms of operational activity. A feature of the competitive potential of the enterprise is its compliance with the purpose of the enterprise. The level of competitive potential of the enterprise is determined not in comparison with its abstract, maximum possible or achievable value, but depending on the current state of the research object.

This gives reason to form a methodological rule, according to which the higher the amount of resources available to the enterprise and the more efficiently, the most precisely selected tools and mechanisms for transforming resources into enterprise advantages, the higher the level of competitiveness it can achieve.

This statement allows us to describe the possible states of the enterprise at a certain point in time from the point of view of the existing level of potential. The competitive potential of the enterprise will be determined by the extent to

which the available tools meet the resources according to the criteria of volume, composition and structure. According to the level of compliance with the composition and structure of resources, enterprises can be effective (with a high level of compliance) and ineffective (insufficient level of compliance).

The area of potential capabilities of the enterprise will be determined based on both the structural and quantitative correspondence of resources and the mechanisms of their transformation, that is, various cases of a combination of the specified components that form the competitive potential of the enterprise are possible. The latter is formed in the process of transformation of both internal system resources and resources that are outside this system. A distinctive feature of the competitive potential is the presence of endogenous and exogenous factors that cannot be directly attributed to resources or tools, but they form the general principles of the enterprise's functioning, its potential properties and opportunities for their implementation, and determine the level of competitiveness.

Exogenous factors that form the competitive potential of agricultural enterprises include: natural and climatic, institutional, industry barriers, market conditions, etc. To endogenous – corporate culture and values, legal form of capital, etc. The last group of factors are secondary to exogenous ones, but their influence is more predictable and can be influenced by business entities.

So, forming the content of the competitive potential of the enterprise, it can be noted that it is an area that is formed by the combination of internal and external competitive capabilities of the enterprise, which can be formed in the process of transformation of resources by the tools and mechanisms at the disposal of the enterprise under conditions of limitations formed by endogenous and exogenous environmental factors. Implementation of internal and external competitive opportunities is possible only if the formed internal capabilities of the enterprise are superimposed on external competitive opportunities.

In the system of competitive advantages of poultry enterprises, it is important to highlight the competitive advantages of products, which are the

foundation of the advantages of the business entity as a whole. But, in addition to the existing advantages of certain types of products, the competitiveness of the enterprise depends on whether it is able to ensure the maximum possible efficiency with available resources. Therefore, the process of forming the competitive advantages of agricultural products should be preceded by the justification of the industry structure of the enterprise, the desired quality and cost characteristics of the manufactured products, the organization of entrepreneurial activity, which will be able to ensure the maximum result and a stable position in the competitive environment for a long period of time.

Taking into account the peculiarities of the manifestation of the competitive potential of the poultry enterprise, the development of management solutions within the framework of the synergistic process approach should be directed to the sources of the formation of the competitive advantages of the enterprise: synergism, synergistic effects of integration development and effective implementation of business processes. We have developed the principles of analysis and management of the competitiveness of agricultural enterprises, taking into account the level of their integration. The methodological purpose of the developed principles is to determine the organization of management of the process of forming the competitiveness of the enterprise. The proposed principles give a clear idea of the composition and interrelationships of the functional blocks of business processes, which are responsible for creating and maintaining the competitive advantages of the business entity. The allocation of responsibilities in relation to the objectives, methods and mechanisms for managing dedicated units will ensure the creation, maintenance and effective use of sustainable competitive advantages.

The following main processes are the stages of analysis and management of the competitiveness of poultry enterprises. The initial stage is the calculation of the indicator of competitiveness of agricultural enterprises based on intermediate data for the relevant time period. The next stage is the planning of the indicator of competitiveness of agricultural enterprises for the corresponding

period. Next, we conduct an analysis of the competitiveness of the enterprise, including sub-processes: analysis of the implementation of business processes; analysis of synergistic effects of integration development; detailed factor analysis of group indicators of competitiveness and their components; identification of “key” and “problem” indicators that affect the result.

After that, management decisions are formed regarding the impact on the competitiveness of the enterprise, including sub-processes: updating (adjustment) of the competitive strategy of enterprises; formation of a plan of measures to improve (develop) competitiveness; adjustment of the target (planned) indicator of competitiveness and its components; updating (adjustment) of tactical and operational plans and tasks; other management decisions. Within the framework of the sub-processes “formation of a plan of measures to improve (develop) competitiveness” and “actualization/adjustment of tactical and operational plans and tasks”, it is necessary to form management decisions, measures and assignments aimed at increasing the efficiency of business processes and strengthening the synergism of integration.

Therefore, the formation of the competitiveness of poultry enterprises should be based on a systematic analysis of the economic process, which involves the study of structural and functional indicators of each line of activity, taking into account the stages of the operational cycle. Within the industry, actual and prospective competitive potential is determined, which forms competitive advantages and sources of their provision, integrating them on various sub-processes to reduce the risk of using the potential and minimize the probability of reproduction by competitors.

At the same time, the essence of the economic efficiency of poultry farming is manifested in ensuring high productivity and quality of products, maximizing the profit from their sale per head of poultry and simultaneously reducing labor, material and financial costs for the production of a unit of production, taking into account the interaction of internal and external factors of production. To achieve sustainable development of the industry, it is important

not only to increase production volumes in accordance with growing demand, but also to constantly increase labor productivity, optimize resources and introduce innovative technologies for keeping, feeding and processing poultry, which allows to improve the quality of products and reduce the cost of their production. This approach ensures a simultaneous increase in the economic efficiency and competitiveness of poultry enterprises on the domestic and foreign markets.

### **1.3. Methodical approaches to determining the economic efficiency of poultry enterprises**

Poultry farming is one of the fastest-growing, science-intensive and dynamic branches of animal husbandry in the agro-industrial complex, characterized by a rapid rate of reproduction of livestock, high productivity and viability, the lowest cost of living labor and material resources per unit of products. This industry has a number of specific features that determine its economic efficiency: there is no seasonality of production, the products are produced and sold evenly throughout the year; independence from weather conditions; completed technological cycle; use of parts of products in the next production cycle; uniform acquisition of the herd of poultry during the year; high level of automation and mechanization of production; poultry farming has great flexibility to change the scale of production in comparison with other branches of livestock, since here the dependence of the herd on the quantity and quality of land is less manifested; the main producers are specialized enterprises – poultry farms, where production passes several stages, from egg incubation to livestock fattening; resilience of demand, as an essential product; the main part of the feed diet is purchased feed (feed), so there is a dependence on the grain market (volume of production and quality of feed); poultry is characterized by

high productivity, precocity, production in conditions of regulated microclimate factors.

Since the essence of increasing economic efficiency is to increase economic results for each unit of expenditure in the process of using available resources, the problem of its provision is to solve two interconnected groups of problems: ensuring the growth of effective production indicators (natural and gross products); ensuring rational use of resources and related reduction of production costs.

In modern conditions for poultry enterprises, the development and justification of the system of indicators of economic efficiency of poultry enterprises, which is an orderly set, comprehensively characterizes the state and effectiveness of production and economic activity, is of important importance. It makes it possible to assess the state of the enterprise, optimize the structure of production to meet the needs of the population in food and improve the economic efficiency of the enterprise. This system should characterize all components of production. It may include indicators that are common to all components and levels of agriculture or are of industry nature; reflect the level of economic efficiency of the enterprise as a whole or certain types of production resources; provide an expenditure or resource assessment of the economic efficiency of production [37; 48].

Particular attention is paid to the research on the effective functioning of agricultural production, including poultry enterprises, in the scientific works of such domestic agrarian scientists: [8; 19; 36 ; 55; 56; 128-130; 142; 170; 174-177; 180; 198; 201; 205, etc.]. But despite a significant number of scientific researches and published works, the main theoretical provisions and practical aspects of economic efficiency of business entities remain controversial. Further scientific research requires methodical approaches to the selection of components and criteria of the system of indicators of evaluation of economic efficiency of enterprises, identification of reserves and possibilities of their functioning, determination of directions for increasing economic efficiency and

development, use of economic and mathematical methods in predicting their further development.

In the economic literature proposed enough methodological approaches to the assessment of economic efficiency. Considering the category of “efficiency” it is advisable to analyze existing approaches to the definition of this category., as the degree of achievement of the goals of the business entity, A. Kutsenko, highlights the target, systemic and selective approaches to its research [111].

The essence of the target approach is based on the logic of goals and means proposed by English economist L. Robin, and defines effectiveness as the subject’s ability to achieve certain goals through the rational actions of its components. Rationalism consists in choosing such an option to use the resources of the enterprise, which will allow you to achieve the established goals at the lowest cost. It should be noted that the purposes of enterprises are not always clearly defined, which in turn complicates the process of determining efficiency. As a rule, the goals of enterprises can be expressed in the form of certain economic indicators, the achievements of which the company tries to provide in the process of activity in a variety of ways. The choice of methods depends on such factors as laws, regulations, decrees, traditions, mentality, etc. That is, depending on the conditions and requirements of the external environment, the capabilities of the enterprise, the interests of its personnel are different in time, complexity and cost of achieving the desired results of the enterprise. Often the interests of certain components of the enterprise do not coincide with the interests of others, which negatively affects the wording of common goals and accordingly affects the efficiency of the entire organization. Therefore, the target approach is appropriate in terms of satisfying the interests of each of the interested components, rather than the entire organization [70].

A systematic approach is a passive approach that involves the concentration of the enterprise’s attention on its survival through adaptation to the external environment. Having a certain amount of unused resources, the company has the opportunity to adapt better to changes in the external

environment. But the presence of unused resources, in turn, contradicts the criteria for minimizing costs. Thus, this approach focuses on the internal characteristics of the enterprise, which makes it more suitable for assessing the activities of budget organizations [70].

The selective method assumes that the efficiency of the enterprise cannot be evaluated based on predetermined criteria, or system characteristics. This method is to ensure the minimum level of satisfaction of all the needs of the organization, the motives of the activity and the goals of which differ. An important and complex in this method is the identification of strategic components and determining the degree of their impact on the activities of the enterprise as a whole. It is also undesirable to change the conditions of management of the enterprise, which occurs under the influence of a significant number of changes in both external and internal factors. This disrupts balance and leads to a shift in the economic balance in favor of other interested groups [70]. By studying these approaches, it can be argued that positive results can only be achieved by a weighted combination of these approaches, which will allow the disadvantages of one to compensate for the benefits of the other [111].

Prokofiev distinguishes two today approaches to determining the essence of the category “efficiency” [111]. The first approach characterizes “efficiency” in the sense of effectiveness, that is, answers the questions, what results are achieved, and at what price, what and how much resources were spent to achieve the results [131]. In this approach, efficiency is considered as the ratio of results and costs. The criteria for the first approach are “result-cost”. But the question arises whether the result will give us the opportunity to achieve the goal, how close we are to achieving the goal [111]. The presence of these questions caused the existence of a second approach that characterizes “efficiency” from the position of achieving the goal, he answers the question whether we have achieved the goal, how close we have come to it. The criteria for the approach are “result-goal” [131].

Therefore, one can conclude that the goal-achieving function is essential when determining efficiency. The approach to considering “efficiency” from the point of view of achieving the goal does not contradict the approach to consideration of “efficiency” in the sense of effectiveness, it has a more complex character, the criteria for this approach is the correspondence of the actual result to the goal set. Efficiency, which is considered from the point of view of achieving the goal and characterizes the quality of the result [111].

The poultry company is an economically separate territorial and production system that produces, processes and sells products. This enterprise is an open economic system, in which there is an interaction of both production and non-production service links, and commodity conducting – wholesale and retail. At the same time, this system of the poultry enterprise is closed by a link of consumers of final products. The organizational and economic mechanism of effective functioning of poultry enterprises is considered as a system of organizational, economic, technological, environmental levers and management methods, which in the process of interaction provide a high level of profitability and efficiency of production at optimal resource costs by enterprises of various forms of management. Production efficiency is determined by the influence of a number of factors of the internal and external environment of the enterprise. External should include: - state and social policy (government, legislation, financial instruments, economic standards); - institutional mechanisms (research and training centers, institutes, associations); - infrastructure (innovative funds, commercial banks, stock exchanges, information networks, transport, trade); - structural changes in society and economy (in the field of technology, research, staff on the grounds of Internal factors: (natural and economic conditions of production, technology and organization of production processes, production costs) provide for the need to mobilize the available resources of poultry enterprises to ensure high production efficiency. These components allow you to take into account the main trends and contradictions in the effective development of the industry, develop specific proposals for enterprises. In

addition, regional conditions also affect the economic efficiency of production and the competitiveness of products in the market.

An important component of the method of studying the economic efficiency of poultry enterprises is a systematic approach that includes the analysis of technical, economic and socio-economic relations occurring in the field of poultry farming. In our opinion, this approach takes into account the cumulative impact of all factors of production on the final results of the work teams, since each of them to one degree or another has a direct or indirect impact on the effectiveness of production, profit and economic effect.

In accordance with the purpose and objectives of the dissertation research, taking into account the existing methods, we have supplemented the method of studying the effectiveness of poultry production, which includes three stages. The proposed scheme of research involves a phased study of the process of development and analysis of economic efficiency of poultry enterprises in market conditions.

Stage I – placement of production: by categories and size of enterprises; by types of production; dynamics of livestock and poultry production;

Stage II – production of poultry products: poultry productivity; level of concentration of production; level of specialization of enterprises; structure of gross and commodity products; labor costs per unit of production; sales of poultry products: the level of commodity of poultry production; structure of poultry sales channels; the cost of poultry production; revenue and profitability from the sale of products; price situation in the market.

Stage III – provision of the population with poultry products: level of consumption of poultry products; provision of the population with poultry products; the level of consumption of poultry products by individual species; degree of market saturation with poultry products; quality of poultry products according to the criteria of consumer preferences.

A consistent analysis of the system of economic indicators grouped in accordance with the above scheme makes it possible to analyze in depth the

essence of the processes of placement, specialization, concentration and determine the effectiveness of poultry enterprises depending on the influence of various organizational and economic factors. For this approach, performance indicators in poultry farming can be represented in the form of two interconnected parts: specific performance indicators that characterize certain sides of the production process, the use of certain types of resources (costs) and a generalized indicator of production efficiency, the formation of which is influenced by specific indicators of the system.

In this regard, the assessment of the economic efficiency of poultry enterprises is a system built on the principle of comparison of the results of influencing factors for the following types of economic efficiency: the functioning of the poultry industry, which is characterized by the level of production of poultry products per capita, the level of productivity in the industry, which will allow to assess how much the domestic commodity producer is able to provide the country's population with quality products and maintain the level of competitiveness of the industry; the activity of the poultry enterprise, which reflects the level of efficiency of using the resource potential of the business entity, is characterized by the level of resource capacity of products; production of eggs, poultry meat and products of slaughter and processing, which reflects the level of use of innovative technologies in the production of products in demand in the market, is characterized by the level of its quality, cost, price, profitability and other indicators; individual events (zootechnical, veterinary, engineering, etc.), determined by the approved methods.

In modern conditions, the system of indicators is optimal, which characterizes the financial condition of the enterprise, the efficiency of the use of production resources, the state of the market for poultry products. The economic efficiency of the poultry industry is expressed by the degree of implementation of production facilities and living labor, characterized by the return on aggregate investments, the criterion of which is the maximum possible

profit from its implementation. In addition, it is important to obtain eggs based on one poultry company (egg direction) or 1 m<sup>2</sup> of the floor area of the poultry growing shop (meat direction) at the lowest cost per unit [57].

In the market environment, the mechanism for assessing efficiency in poultry farming, in our opinion, should predict a slightly different approach. In modern conditions, it should reflect not only the production of the maximum amount of high-quality product from a unit of area at minimal cost, but also the achievement of the goals associated with the removal of the industry from the crisis, the food independence of the country, providing the population with food at affordable prices, reducing labor costs and means per unit of production, ensuring the competitiveness of production, changing working conditions for extended reproduction, environmental protection.

The criteria for economic efficiency of production in general can be formulated as a maximum effect of a unit of labor costs or a minimum of cost per unit of effect. At poultry enterprises, the criterion for economic efficiency is profit (the difference between the value of commodity products and the amount of consumed means of production and living labor) for an average of 1 average annual worker. So, the cheaper the products, the more efficient the production [48].

In general, natural and cost indicators are used to assess the economic efficiency of production. Natural themselves do not yet indicate the level of economic efficiency of production, but are the starting point for its measurement. In terms of market relations, the role of cost indicators increases, which take into account the development of commodity turnover more fully, contribute to strengthening economic ties and self-accounting [95].

According to L.Vrovko and O.Onyschenko, all economic indicators should be divided into specific (individual) and general. With the help of specific indicators, the study of a particular side of the investigated phenomenon is carried out, and with the help of general indicators, an analysis is carried out in general of all processes at the enterprise. General indicators characterize

economic efficiency – remuneration fund; energy capacity of production, etc., and specific – the quality of products released; efficiency of the use of basic production funds and material resources, working capital for a particular industry, profitability [15; 100].

According to I. Buzdalova, in addition to the generalizing indicator of efficiency – profitability, are used other, first of all, effective indicators – gross profit, net income, profit; labor productivity, production cost, stock yield, gross income per unit of labor costs, hryvnia production funds. The basis of the system of performance indicators is the category of profitability, integrating the real ratio of two components: costs and results. The results, according to the author, are in the form of gross income, net income, profit, and expenses are divided into production, sales, complete. The ratio of these indicators is decisive for the system of indicators, the main thing in which is the profitability indicator of all funds advanced in production [17].

It should be noted that scientists have different approaches to substantiating the integral indicator of economic efficiency of production. Some emphasize the complexity of determining the result of production, others – costs. During the consideration of this issue, the following indicators were proposed as a result of production: gross public product (gross, commodity, sold products), the final product, the integrated fund of consumption of material goods and services. During the discussion, most scientists prefer the indicator of national income. This opinion is confirmed by the fact that the calculation of the integral performance indicator should be carried out on the basis of the criterion, which provides for the maximum increase in gross income per unit of expenditure (resources) compared to the normative level [78; 107].

Most scientists who study the economy of industrial poultry industry, offer to use the following system of indicators depending on the direction of their activity in assessing the economic efficiency of poultry enterprises. Thus, to assess the effectiveness of egg production, you should use a system of indicators such as: obtaining eggs per year from the average annual laying-out, the uterine

head of different types of poultry; relative egg capacity, which represents the percentage of eggs received to the number of days of laying in the line; feed payment: egg yield per 1 ton of feed spent or reverse; productivity: the number of eggs received in natural terms per spent man-hour, per average annual worker employed in poultry farming; labor intensity: labor costs per 1000 eggs; the cost of gross production from the production of eggs per person-hour, per average annual worker in the industry; cost 1000 pcs. eggs; profit from egg production; profitability of egg production [56].

The economic efficiency of poultry meat is characterized by the following indicators: output of products per head of the parent herd of poultry; feed payment (feed consumption per unit of production, poultry meat yield per 1 kg of feed); productivity (production of poultry meat per 1 person – hour. or 1 average annual worker employed in poultry farming, commodity products per 1 person. and 1 employee of the enterprise; labor intensity (labor costs per 1 kg of live weight gain (1 kg of poultry meat); cost (production and commercial) per 1 kg of live weight gain and poultry meat; intensity of fattening (average daily increase in live weight of poultry, g,) fattening duration (days), production of live mass (poultry meat) per 1 poultry place and per 1 m<sup>2</sup> of poultry house area, kg; profit (net income) per 1 person, per 1 employee of the organization, per 1 kg of live weight of poultry, per 1 bird seat and 1 m<sup>2</sup> of poultry house area; profitability level of poultry meat production, %, payback period of capital investments, years [198].

These indicators are used for a deeper economic assessment of the production process in poultry farming. The division of indicators into basic and additional is quite relative, because depending on the purpose of the analysis, a corresponding system of indicators is selected, which are grouped in the following way: indicators characterizing the financial condition of the enterprise, the efficiency of the use of production resources and the state of the market.

As you can see, the economic efficiency of poultry production is characterized by a number of indicators, the analysis of which allows you to identify flaws and make the right approaches to increase the efficiency of poultry production. The starting points here are natural indicators: egg and meat productivity. But they ultimately reflect only one side of the achieved efficiency of the use of poultry. Therefore, to identify their economic efficiency, aggregate labor costs are determined, which determine one or another indicator of productivity. This is due to the fact that the same level of productivity can be achieved at different labor costs and costs. In addition, with the same performance, different quality of products can be obtained, which affects the production efficiency.

For a qualitative assessment of the work of poultry enterprises, an indicator of productivity is used. In particular, in the enterprises of the egg direction – an egg (obtaining eggs for the biological cycle and certain age periods – week, month, year, cycle year, on the average annual laying, on the uterine head of different species of birds, the intensity of egg capacity), in broiler poultry breeding – average daily growth of the live mass of broilers, the yield of young people on one mother's head.

Egg content on the initial laying-out is often called the index of productivity, because this indicator depends on both the number of eggs obtained from the laying-out, and the preservation of the livestock (taking into account the fall and forced culling of the livestock) and the duration of the maintenance of layers, since the moment of the repair of the young in the main herd, that is, from the 150-day age. This index is determined by the amount of egg mass produced by one carrier in a certain period of time. The higher the egg capacity and the higher the average weight of eggs, the higher the egg productivity of the poultry. Also, to determine the egg productivity of the bird, an indicator of egg intensity is calculated, which is determined by the ratio of the number of eggs demolished for a certain period to the amount of feed days for a certain period and is expressed as a percentage:

$$I = (N/Ch) \times 100\%, \quad (1.1)$$

where I is the intensity of egg production; N – the number of laid eggs for a certain period; Ch – the number of fodder days for a certain period.

In recent years, researchers have been trying to find such an indicator that would reflect the impact on the performance assessment of all the most important factors for accounting, namely, the intensity of the egg, the weight of the egg, the consumption of feed, the weight of the laying body. It has been studied that the weight of a laying egg at the age of one year is approximately one-thirtieth the weight of her body. If such a chicken is carried every day, then the weight of all the eggs demolished per month will be equal to the weight of her body and the coefficient will be equal to one. As such, an index of egg-laying effectiveness is offered:

$$I_{ef} = (KM \times I_p) / V_k = ((30 \times (M_{eg})^2) / (M_n \times V_k)) \times (V_s / 100), \quad (1.2)$$

$$K = (30 \times M_{eg}) / M_n, \quad (1.3)$$

where  $I_{ef}$  is the oviposition efficiency index; 30 is the weight of the laying hen's egg, which is equal to approximately 1/30 of its weight;  $I_p$  is the intensity of egg production;  $M_{eg}$  is the average weight of eggs;  $M_n$  is the live weight of the laying hen;  $V_k$  – feed consumption per day;  $V_s$  – the percentage of herd preservation.

In our opinion, the index of egg-laying effectiveness is important practical. It can be used in the assessment of poultry herds, individual lines and bird families, as well as to compare bird groups by fattening and when developing conditions for its maintenance, etc.

Modern industrial poultry industry presents high requirements for the quality of poultry: it should give for a long time a lot of high quality products. The regulatory data of the carrier should not be lower than the average indicators obtained over the past reporting year, taking into account unused reserves.

Also, one of the important indicators of the efficiency of production of poultry production is the coefficient of turnover of the poultry herd ( $K_{os}$ ), which also characterizes the level of poultry productivity – the higher the herd turnover coefficient, the higher the productivity:

$$K_{os} = P_{ms}/P_{sr}, \quad (1.4)$$

where  $P_{ms}$  – poultry livestock transferred to the uterine herd;  $P_{sr}$  is the average livestock of a poultry for a year.

The study of the duration of productive use of chickens is based on an assessment of their genetic and production potential, as well as economic factors such as the cost of feed, eggs, meat, etc. We believe that work on increasing the objectivity of calculations of the terms of use of laying hens (without the use of forced molting) should begin with the assessment of the quality of the business young bird. At the same time, it is important to take into account such an indicator as the degree of vitality, which allows you to evaluate the economic and production feasibility of using the young as an initial laying-out. It does not make sense to start work on optimizing the terms of operation of chickens at poultry enterprises in the presence of livestock with a low level of quality of business young animals, as this threatens the implementation of the entire production program of the enterprise.

When determining the optimal period of maintenance of chickens and the level of productivity of poultry, ensuring maximum performance of the production program, it is important to find the level of productivity of chickens, below which further maintenance becomes economically impractical. The duration of the productive period of use of chickens should be determined not so much by their genetic potential as by economic factors (the cost of feed, the quality of repair of young animals, the cost of eggs and meat). All these indicators are interconnected and together form the threshold of economic expediency of egg production. To calculate this indicator, the main output should be: feed consumption per 1 head per day, the cost of 1 kg of feed, the proportion of feed in the structure of the cost of eggs and the price of egg sales.

Other variables do not significantly affect the determination of the life of chickens. The formula offered by us to determine the threshold of economic expediency when keeping chickens is as follows:

$$R_{\min} = \frac{S_{\kappa} * V_{\kappa}}{Ch * Cr} * 100, \quad (1.5)$$

where  $R_{\min}$  is the minimum threshold level. It shows the level of laying of laying hens, at which the enterprise begins to bear losses, %;  $S_{\kappa}$  – feed consumption per head per day, kg;  $V_{\kappa}$  – the cost of feed, UAH/kg;  $Ch$  – the share of feed in the structure of the cost of eggs, %;  $Cr$  – the selling price of eggs, UAH.

It is not advisable to evaluate the economic efficiency of poultry farming only by the productivity of poultry, since this indicator reflects only the degree of use of livestock and the biological potential of poultry, but does not show what is the efficiency of the use of labor and means of production.

Indicators of evaluation of the result of production activity of poultry enterprises are: gross production volume, profit from sales of products, profitability level and cost per unit of production. The volume of gross production is one of the important indicators that characterizes the volume of production of a particular enterprise and the poultry industry as a whole. Its use allows to evaluate the entire activity of the enterprise, since the specifics of poultry farming as a sector of agriculture includes domestic consumption. To characterize the volume of the product, it is advisable to use the indicator of production of the main types of products in natural expression in order to identify the existing market demand for products by assortment groups.

In modern conditions, the main economic mission of any enterprise is to obtain the maximum profit, which serves as a measure of production efficiency. It is known that profit is the result of effective activities and a reserve of steady extended reproduction. Profit indicator, in addition, can be used in determining the level of efficiency of agricultural enterprises and certain types of manufactured products. Profit from the sale of products is a universal indicator

that characterizes the effectiveness of sold products in agriculture and industry [30]. The profit size should provide poultry enterprises with self-financing and extended reproduction, which is the main condition for the survival of any business entity, including poultry farming, in the face of stiff market competition. However, we believe that for comparative assessment of the economic efficiency of production of certain products, poultry industry and agricultural production in general, there is not enough accounting for the absolute value of profit. It is necessary to compare the profit with the incurred costs.

In addition to the indicator of profit from the sale of products, it is advisable to use the profitability indicator as a relative indicator that is more analytical, and which is expressed in the percentage of profit (net income) to the cost of sold products or the cost of basic and working capital [47].

The main factors in the growth of profitability are the decrease in cost and the improvement of product quality. The level of profitability is affected by the change in prices and the range of products produced.

A generalizing indicator of the economic efficiency of poultry enterprises, which reflects the results, namely: the rational use of material resources, the degree of specialization and concentration of production, the use of scientific and technological progress, etc. – is the cost. This indicator reflects the total costs of the enterprise for the production and sale of products. The cost by itself does not show how the profitability of production changes and is not an indicator of its effectiveness, so to establish the profitability of individual products (eggs, poultry meat) it is compared with the proceeds from sales. Profitability, in turn, depends on the level of prices at which products are sold and its quantity and quality. The importance of this indicator is enhanced in the conditions of increasing production volumes, since a decrease in one of the elements of cost leads to an increase in competitiveness and profitability of products.

The level of profitability is one of the generalizing indicators of economic efficiency of production, since it reflects not only the quantitative, but also the qualitative aspects of the enterprise. It characterizes the efficiency of the enterprise, profitability of their activities (production, marketing, business, investment, etc.), payback of expenses, etc. The analysis of profitability of the enterprise should be carried out using profitability indicators using a cost-effective approach (profitability of products, profitability of operating activities, etc.); indicators characterizing the profitability of the sale (net profitability of the sale, etc.); indicators of resource efficiency, or resource approach (return on equity, return on assets) [144]. The level of profitability can be determined as follows:

$$N_p = (m / (c + v)) \times 100, \quad (1.6)$$

where  $N_p$  is the level of profitability, %;  $m$  – net income or profit;  $c + v$  – the cost of 1 ton of meat (1000 eggs).

Production of expanded product range requires calculating the cost of each type of product. For an in-depth analysis of the economic activity of the enterprise and the identification of reserves of increasing the efficiency of general economic indicators, it is important to supplement with more specific ones that characterize the use of production resources. Therefore, in the system of performance indicators, we have identified indicators of the use of labor and material resources and fixed assets of production.

Given that in the structure of the cost of production of poultry meat, almost all poultry enterprises occupy about 70% of feed, their rational use is the main reserve of reducing the cost of production of poultry products. Feed savings in industrial poultry farming is considered as an important reserve for reducing the cost of production. Therefore, it is advisable to conduct a detailed analysis of the feed consumption indicator per unit of products with comparison with the poultry productivity, since full and economically justified feeding ensures high poultry productivity, allows reducing feed consumption per unit of products. The use of relative indicators allows to estimate the degree of intensity

of use of production potential of poultry enterprises. It is known that in the international practice of broiler production, the calculation of the European Efficiency Index (EEI) is widely used:

$$EEI = \frac{\text{Herd preservation, \%} \times \text{Live weight 1 head, kg}}{\text{Age of the bird, days} \times \text{Feed consumption per 1 ton of increase, kg}} * 100, \quad (1.7)$$

where the EEI values are obtained: from 260 to 280 – an average indicator; from 280 to 300 – a good indicator; more than 300 is an excellent indicator. However, the use of this formula practically does not take into account the market situation. We offer the poultry production efficiency index (IEM) to count on the formula:

$$IEM = \frac{P \times (M_{zh} \times Z_m \div 100) \times C_r}{K \times P \times (V_k \times 100 \div C_h)}, \quad (1.8)$$

where P is the stock of grown broilers;  $M_{zh}$  – live weight of 1 broiler carcass, kg;  $Z_m$  – yield of broiler carcass meat in slaughter weight, %;  $C_r$  – selling price of meat, (in slaughter weight), UAH/kg; K – feed costs per head per growing period, kg;  $V_k$  – feed cost, UAH/kg;  $C_h$  – share of feed in the cost of meat (in slaughter weight), %.

Also an important indicator of the proposed system is the evaluation of the efficiency of the use of basic production facilities. In this regard, in our opinion, the traditional system of economic indicators can be used to characterize the level of intensive use of basic production facilities in poultry farming: stock security, stock security, stock allocation.

For a comprehensive assessment of the economic efficiency of the production of poultry products, taking into account the specifics of the industry, it is advisable to use not only traditional economic indicators, such as the cost of production, the volume of gross production, profitability and profit, but also to take into account social and environmental aspects. Social efficiency in poultry

farming reflects the ability of enterprises to provide the population with products of animal origin at the level of rational food standards, meet the needs of the market and fulfill public expectations regarding safe and high-quality products. Indicators of social efficiency may include the level of meeting the demand of the population, ensuring employment and the level of remuneration of employees, which directly affects the social stability of regions and the development of the agrarian sphere as a whole.

Environmental efficiency is aimed at compliance with the requirements of sustainable development and environmental preservation in the management of poultry production. It involves the rational use of natural resources, minimizing the negative impact on soils, water resources and the atmosphere, as well as compliance with production waste disposal standards. Key indicators of environmental efficiency include preservation of soil fertility, optimization of water and energy use, the level of bioconversion of waste into productive resources, as well as compliance of products with sanitary and environmental standards.

Thus, in order to ensure an objective and comprehensive assessment of the efficiency of poultry production, it is necessary to form a system of indicators that combines economic, social and ecological criteria. This approach allows not only to determine the efficiency of resource use and profitability of the enterprise, but also to assess its contribution to meeting the needs of the population and maintaining environmental safety, which, in turn, contributes to increasing the competitiveness of the industry's enterprises at the regional and national levels (Table 1.1).

Thus, the efficiency of the enterprise is a complex category, a multifactorial concept that comprehensively investigates its activities, in combination takes into account all stages of the production process. In its basis, it is aimed at maximizing production volumes while minimizing material and financial costs.

In order to fully analyze the activities of the enterprise, to draw clear conclusions about its condition, it is necessary to consider the system of indicators in the aggregate. After all, if one or another indicator depends on another directly or indirectly, its value changes.

*Table 1.1*

**Indicators of poultry production efficiency**

Efficiency	Indicator
Use of production resources	<ul style="list-style-type: none"> <li>- the volume of gross and commercial products in kind and money;</li> <li>- use of production assets;</li> <li>- laying hen laying hens;</li> <li>- herd turnover ratio;</li> <li>- average daily live weight gain;</li> <li>- feed costs and labor costs per 1000 pcs. eggs and 1 t of growth;</li> <li>- carcass output per 1 m<sup>2</sup> of production area;</li> <li>- labour productivity;</li> <li>- poultry planting density per 1 m<sup>2</sup> area.</li> </ul>
Financial and economic condition	<ul style="list-style-type: none"> <li>- production cost of 1 kg of increase, 1000 pcs. eggs;</li> <li>- cost of feed;</li> <li>- costs per 1 kg of increase, 1000 pcs. eggs;</li> <li>- volume of poultry products sold;</li> <li>- proceeds from sales;</li> <li>- sale price;</li> <li>- net profit;</li> <li>- profitability level;</li> <li>- ratio of total liquidity;</li> <li>- working capital turnover ratio;</li> <li>- capital transfer and capital consumption;</li> <li>- fund support, fund armament and stock supply.</li> </ul>
Poultry Market	<ul style="list-style-type: none"> <li>- the degree of saturation of the market with poultry products;</li> <li>- balance of demand and supply of poultry products;</li> <li>- competitiveness of poultry production;</li> <li>- purchasing power of the population.</li> </ul>
Social	<ul style="list-style-type: none"> <li>- level of wages of industry employees;</li> <li>- skill level of personnel;</li> <li>- turnover of personnel;</li> <li>- size of consumption fund per 1 employee;</li> <li>- level of occupational diseases and injuries;</li> <li>- level of use of computerization tools;</li> <li>- level of development of social infrastructure.</li> </ul>

*Source: adapted [25; 31; 48; 54-57; 62; 69; 72; 95; 100; 101; 125; 144; 169; 184]*

Hence, the study of the system of economic indicators of production efficiency in poultry farming in a market economy is a methodological basis for

rational production management, management of specialized enterprises, organizations of economic work and scientifically grounded assessment of poultry enterprises, recognition of these enterprises by the consumer in the poultry market.

**SECTION 2.**  
**ANALYSIS OF THE CURRENT STATE AND**  
**TRENDS OF POULTRY ENTERPRISES DEVELOPMENT**

**2.1. Current state and trends of poultry production development**

Poultry in Ukraine plays an important role in ensuring the food security of the country, as the main producer of high-quality animal protein, the share of which in the diet of Ukrainians reaches almost 40% due to the consumption of eggs and poultry meat. Poultry farming as one of the industries of agricultural production, being science-intensive, material-intensive and energy-intensive, like all sectors of agriculture, but unlike others, is most easily subjected to automation, electrification and mechanization of production processes. This industry is a complex agricultural production with a long continuous cycle, which can not be stopped periodically. The final production of this industry are incubation and food eggs, meat, slaughter and processing products, down and feathers.

Unfortunately, the reforms of the 1990s greatly influenced the state of the industry, exacerbating competition between producers of poultry products. The decline in production of poultry production is a natural consequence of the collapse of the system of logistical support of the village, price disparity and the possibility to profit from the sale of products of agricultural producers in the conditions of a decrease in the solvency of the main part of the population of the country and a decrease in financial support of the industry by the state. One of the main reasons for the decrease in production volumes of poultry production was the lack of regulatory framework, which allows to quickly regulate the poultry market and ensure sufficient price competition of the domestic producer. In the conditions of the unregulated market, poultry enterprises found themselves in very disadvantageous conditions compared to other sectors of agricultural production, since their economy largely depends on the purchased

material resources, which in cost are: feed – 73%, energy carriers – 12-15% [142].

The development of the poultry industry in Ukraine has two pronounced periods: the period of decline from 1990 to 1998. and the period of revival from 1999 to 2012. During 1990-1993, the production of agricultural poultry remained profitable. The average profitability of production in the country, during this period, has changed from 17.0% in 1990 to 13.4% in 1993, tending to decline by almost 9.1% per year, reaching its historical minimum of -44.9% in 1997. Average profitability of production of food eggs by enterprises of Ukraine in the period of 1990-1993 years. grew from 27.3% to a historical maximum at 75.1%. From 1993 to 1996, the average profitability of egg sector enterprises gradually decreased, crossing the zero level of return on production in 1996, maintaining an average level of -2.4% - 1.3% by 1998 [51].

Significant changes in the profitability of poultry production for the period of 1990-1998 years. related to the processes of transformation of the economy of Ukraine and the changes that took place in the world markets. These changes greatly affected the state of the industry, exacerbating competition between manufacturers. The deterioration of production facilities, the lack of the possibility of modernization of equipment, the decrease in the solvency of the population, the state regulation of prices, the imperfect marketing of enterprises have led to a deterioration of the situation in agriculture and a decrease in the economic efficiency of production [51].

The volume of production of food eggs of agricultural poultry of all species in 1990 amounted to almost 16.3 billion pieces. But by 1997, the average decrease was almost 1.1 billion pieces a year to the level of 8.2 billion pieces. The livestock of all species of poultry in 1990 was about 254 million heads. By 1997, there was a decrease in the number of livestock of agricultural poultry almost twice to 123.3 million heads, on average by 17.3 million heads per year [51].

Gradual improvement of the poultry industry has been observed since 1999. This was facilitated by legislative decisions and adopted State and Sectoral programs for the development of agriculture in Ukraine, as well as the support of breeding poultry enterprises with state subsidies. Such measures enabled enterprises to gradually improve their financial condition and carry out a gradual modernization of production [51].

The prospects of business development in the field of poultry farming and the relative stabilization of the economy contributed to the attraction of investments in the industry and the construction of new poultry enterprises equipped with modern equipment. New market participants improved their marketing services by taking the best practices of leading foreign enterprises. Strategic planning and logistics organization of enterprises have become the key to improving its competitiveness [51].

The average profitability of production of agricultural poultry meat by enterprises of Ukraine in the period 1999-2003 gradually increased from -45.5% to the level of payback of production. From 2004 to 2006, poultry production was profitable, while the average profitability of production varied from 3.8% to 12.1% with a peak of 24.9% in 2005 [51].

The processes of monopolization of the market for the production of agricultural poultry meat, the import of cheap products from abroad, the deterioration of means of production have led to a decrease in the profitability of most enterprises and their bankruptcy. In one year from 2006 to 2007, the profitability of meat production changed from 12.1% to -19%. The average profitability of food egg production by enterprises of Ukraine from 1999 to 2012 gradually increased by almost 1.9% annually. In 2000-2005, enterprises maintained their profitability, reaching the peak of profitability of food egg production 23.5% in 2005, but already in 2006 there was a sharp decline in indicators to the level of -6.9%. From 2006 to 2012, the average profitability of enterprises gradually began to improve and in 2012 reached 52.6% with a pronounced growth trend [51].

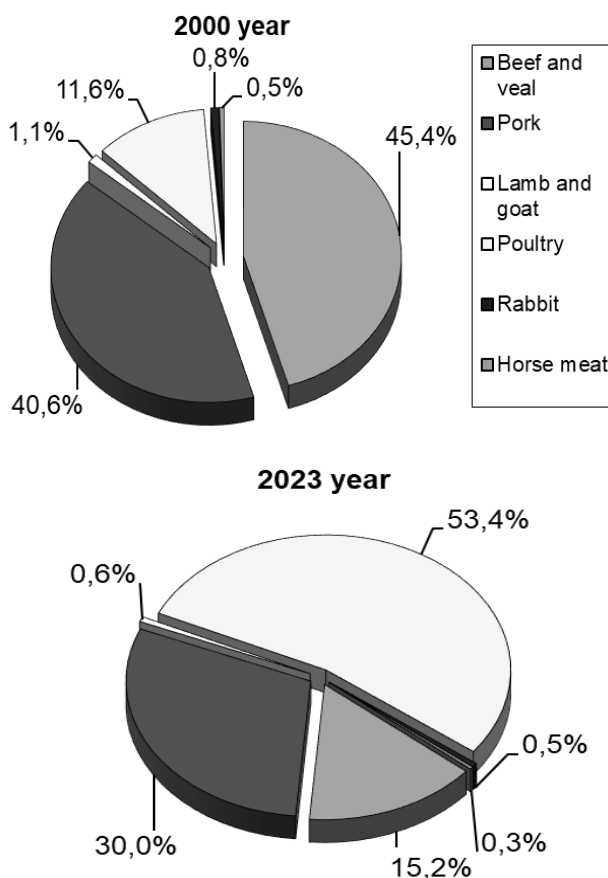
The livestock of all species of poultry from 1999 to 2012 gradually increased with an average increase of almost 7 million heads of poultry per year from 126.1 million heads in 1999 to 214.1 million heads in 2012, which corresponds to 59% growth. The volume of egg production from 1999 to 2012 gradually increased with an average increase of almost 0.81 billion eggs per year. Thus, in 2012, 19.1 billion eggs were produced in Ukraine, which exceeds the 1999 figure by more than twice [51].

By the number of livestock of all types of poultry, the share of households of the population is almost 40% of the total livestock. In the production of food eggs economy population make significant competition to enterprises in the summer. In the production of poultry meat leaders are agricultural enterprises that make up 90% of broiler production [51].

Since the beginning of the global economic crisis of 2008 and to date, there has been a fluctuation in the average profitability of poultry meat production in a negative plane from -22.5% to -4.4% with a period of 1 year. Such processes are explained by the influence of both internal and external factors that lead to the instability of the market situation. Large producers, having significant financial reserves, carry out their own strategies to displace competitors, periodically reducing the price of their own products and monopolizing the market. The bankruptcy of most poultry enterprises that took place over the years, the decrease in employment of the rural population, the increase in demand for food eggs and meat contributed to the development of homesteads and farms of the population, which became participants in the market of poultry products and made some competition for enterprises [51, 60].

In the total structure of meat production by agricultural enterprises of Ukraine in 2023, more than half belongs to the production of poultry meat, almost a third is the production of pork and in the last positions the production of beef and veal (Fig. 2.1). This indicates that poultry production, having a rapid pace of development and reproduction, greater affordability at a price, is in high demand for its products from the population.

For 2000-2023 years the meat market has undergone drastic changes. If in 2000 rub. the basis of production was beef and veal, which occupied a stable share of 45.4%, then in 2023. it almost tripled. Also, the share of pork production decreased, respectively, from 40.6% in 2000 up to 30% in 2023. At the same time, the share of poultry meat of all species increased from 11.6% to 53.4% [193].



**Fig. 2.1 The structure of meat production of all types in Ukraine**

*Source: calculated according to the data of the State Statistics Service of Ukraine*

[106]

Such changes were primarily a natural consequence of the catastrophic situation in the field of cattle breeding, which contributed to the insolvency of domestic consumers, unsatisfactory ratio of income and costs of producers, low security and a significant increase in the price of feed, inefficient sales and processing system, as well as the loss of animals due to disease. On the other

hand, the rapid return on investment in the production of poultry meat led to an increase in investments in this industry, the construction of modern large poultry farms and the creation of powerful vertically integrated companies [112].

Poultry farming is mobile for applying innovation and attracting investments from various sources and differs from other livestock industries by accelerated turnover of invested capital. Increasing consumer demand for poultry meat stimulates the increase in production volumes on an industrial basis. In recent years, as a result of the implementation of measures to stabilize and increase the volume of poultry production, the industry has been steadily and dynamically developing. The main factors that ensured the growth of production volumes include significant investments in this industry, technical re-equipment and expansion of production capacities of poultry enterprises, qualitative improvement of breeding resources and modern management of this industry. Under the influence of these factors, there is an increase in poultry livestock, an increase in its productivity, and, accordingly, an increase in the volume of production of poultry products. Yes, for 2000-2023 years. there is an increase in the livestock of all species in 1.7 times (Table 2.1). In 2023, its number in all farms of the population amounted to 211.6 million heads, of which in agricultural enterprises – 118.8 million heads, and in farms of the population – 92.8 million heads.

So, the largest share in the structure of livestock in 2023 are agricultural enterprises – 56.1%, and economy population – 43.8%. In 2000 the situation regarding the distribution of livestock was directly opposite: the share of agricultural enterprises was in the structure of the livestock of all species – 20.5%, and the farms of the population – 79.5% and the number of livestock reached 123.7 million heads.

Table 2.1

### Trends in the cultivation of poultry of all types

Years	Poultry stock				
	In all categories of households, million heads	including in agricultural enterprises		including in households	
		million heads	specific weight, %	million heads	specific weight, %
2000	123,7	25,3	20,5	98,3	79,5
2005	161,9	66,6	41,1	95,3	58,9
2010	203,9	110,5	54,2	93,2	45,8
2011	200,7	105,7	52,7	95,0	47,3
2012	214,0	117,8	55,0	96,1	45,0
2013	230,2	132,0	57,3	98,2	42,7
2014*	220,6	127,2	57,7	93,3	42,3
2015*	213,3	122,0	57,2	91,2	42,8
2020*	203,9	112,0	54,9	91,9	45,1
2021*	201,6	109,8	54,5	91,8	45,5
2022*	204,8	112,5	54,9	92,3	45,1
2023*	211,6	118,8	56,1	92,8	43,8
2023 to 2000, %	171,1	469,5	x	94,4	x

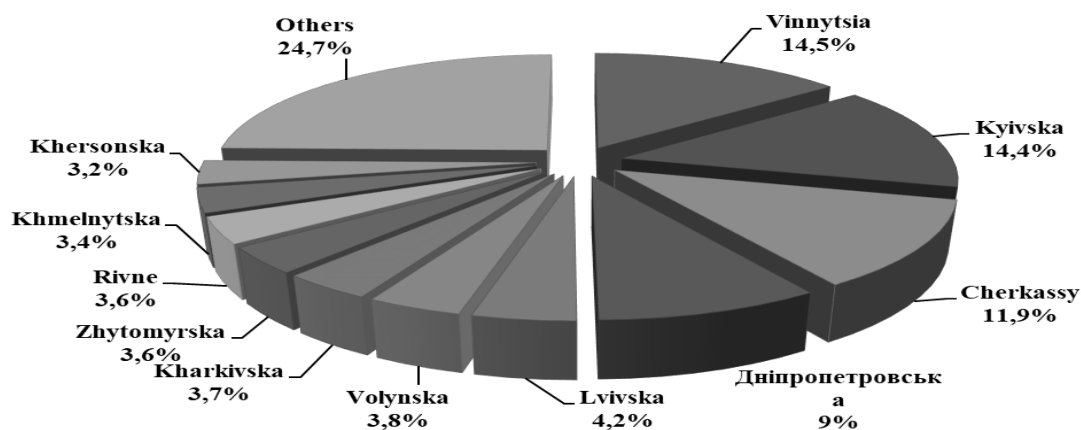
Source: Calculated according to the data from the State Statistics Service of Ukraine [106, 149-154]

\*Data are given excluding the temporarily occupied territories of the Autonomous Republic of Crimea and the city of Sevastopol, for 2014-2023 – also excluding part of temporarily occupied territories in Donetsk and Luhansk regions.

The increase in the livestock of all species in 2023, compared to the last period, was due to an increase in livestock in agricultural enterprises. As you can see, the growth of poultry livestock is positive in the development of poultry farming, and while increasing the productivity of poultry, it ensures the increase of production. Regarding the zonal distribution of poultry farming historically widely developed throughout Ukraine, that is, it acts as a traditional branch of agriculture, due to favorable climatic conditions and a high level of development of grain economy. Poultry farming is mainly concentrated around large urban metropolitan areas. This distribution system takes into account the specifics of poultry production and focus on large markets [112].

Leaders in the cultivation of agricultural poultry, where 50% of the kept poultry livestock of all species for 2023 is concentrated, are Vinnytsia (29.6

million heads), Kyiv (29.5 million heads), Cherkasy (24.3 million heads) and Dnipropetrovsk (18.5 million heads) regions (Fig. 2.2). It is in these regions that the largest number of poultry enterprises is concentrated. Analyzing the share of livestock of all species in accordance with the categories of farms, it can be stated that more than half of the livestock held falls on agricultural enterprises. This indicates that the increase in the level of provision of the food market with poultry products is impossible due to the development of households of the population.



**Fig. 2.2 Distribution of poultry population by regions of Ukraine for 2023**

*Source: Calculated according to the State Statistics Service of Ukraine [106]*

After all, increasing the volume of production of poultry production is possible only due to large specialized enterprises that are able to organize uniform, year-round production on the basis of the equipment of the industrial herd, balanced feeding and ensuring technological requirements, as well as effectively apply veterinary preventive measures and ensure high productivity. Modern poultry farming is based on specialization, concentration and cooperation of production, mechanization and automation, which provide high productivity, uniform, year-round production of products, efficient use of feed and basic production facilities, as well as biological features of poultry.

Increasing the efficiency of poultry enterprises is closely related to the subsequent concentration of livestock at enterprises (Table 2.2). In 2023, 521

poultry farming enterprises operated in Ukraine. Of these, in 143 enterprises, the number of poultry livestock amounted to more than 50 thousand heads. In such enterprises more than 98% of total poultry livestock was concentrated in agricultural enterprises [24].

*Table 2.2*

**Grouping of agricultural enterprises by the presence of poultry stock of all species in 2023**

Groups	Number of enterprises		Number of livestock	
	units	in % to the total quantity	thousand heads	in % to the total quantity
Enterprises – total	521	100,0	118821,9	100,0
of them had, heads				
up to 50	64	12,3	1,1	0,0
51–99	53	10,2	4,5	0,0
200–499	31	6,0	7,9	0,0
500–999	29	5,7	20,3	0,0
1000–1999	35	6,7	48,4	0,0
2000–2999	21	4,0	47,2	0,1
3000–3999	31	5,9	105,8	0,0
4000–4999	12	2,3	49,5	0,1
5000–6999	12	2,3	75,4	0,1
7000–9999	10	1,9	78,7	0,1
10000–24999	39	7,5	607,6	0,4
25000–49999	41	7,8	1080,1	1,0
more than 49999	143	27,4	116695,4	98,2

*Source: Calculated according to the data from the State Statistics Service of Ukraine [106; 164; 165]*

This indicates large industrial content of poultry. The growth of poultry livestock is positive in the development of poultry farming and, while increasing the productivity of poultry, ensures the growth of production. After a long crisis period, since 2000, the development of poultry farming is accompanied by an annual increase in the production of poultry meat.

In Ukraine in 2023, 1770.2 thousand tons were produced in live weight and 1258.9 thousand tons in the slaughter mass of poultry meat (Table 2.3).

Table 2.3

### Poultry production in Ukraine

Years	Poultry production									
	in live mass, thousand tons.					in slaughter mass, thousand tons.				
	In all categories of farms	in agricultural enterprises	Specific weight, %	in households	Specific weight, %	In all categories of farms	in agricultural enterprises	Specific weight, %	in households	Specific weight, %
2000	264,9	58,7	22,1	206,2	77,9	193,2	35,8	18,5	157,4	81,5
2005	671,6	462,9	69,0	208,7	31,0	496,6	319,8	64,4	176,8	35,6
2010	1278,8	1047,2	81,9	231,6	18,1	953,5	772,0	81,0	181,5	19,0
2013	1568,9	1322,5	84,3	246,4	15,7	1168,3	966,6	82,7	201,7	17,3
2014*	1475,3	1241,4	84,1	233,9	15,9	1096,2	904,5	82,5	191,7	17,5
2015*	1541,1	1311,2	85,1	229,9	14,9	1164,7	974,4	83,7	190,3	16,3
2020*	1505,3	1294,5	86,0	210,8	14,0	1143,7	967,7	84,6	176,0	15,4
2021*	1527,5	1311,1	85,8	216,4	14,2	1166,8	992,4	85,0	174,4	15,0
2022*	1586,2	1369,7	86,4	216,5	13,6	1184,7	1014,1	85,6	170,6	14,4
2023*	1770,2	1541,2	87,1	229,0	12,9	1258,9	1084,6	86,1	174,3	13,8
2023 to 2000, %	668,2	2625,5	x	111,0	x	651,6	3029,6	x	110,7	x

*Source: Calculated according to the data from the State Statistics Service of Ukraine [106; 162-164]*

*\*Data are given excluding the temporarily occupied territories of the Autonomous Republic of Crimea and the city of Sevastopol, for 2014-2023 - also excluding part of temporarily occupied territories in Donetsk and Luhansk regions.*

Comparing the development of the industry in 2000 and in 2023, it should be noted that poultry production in 2023 exceeded production in 2000, almost 7 times in the live mass and 6.5 times in the slaughter mass. This is largely due to the fact that meat production in agricultural enterprises increased almost 26.2 times. The increase in poultry production is primarily due to the fact that the population prefers poultry meat in comparison with other types of meat products. The economic crisis has led to a significant reduction in the income of the population, and the retail price of poultry meat is significantly lower compared to the price of beef and pork, which in turn makes poultry meat accessible to impoverished segments of the population. Positive in the

development of the industry is that the ratio of poultry production between agricultural enterprises and farms of the population changes. If in 2000 agricultural enterprises produced 58.7 thousand tons (22.1% of the total production) of poultry meat, then in 2023 – 1541.2 thousand tons, or 87.1% of the production of meat face in all categories of farms.

This indicates that large specialized enterprises operate effectively in Ukraine on the basis of attracting innovation and investment resources and specialize in the cultivation of highly productive poultry crosses – broilers, which in turn have a number of economic advantages compared to the production of other types of poultry meat. This condition is due to the significant breeding plasticity and technological mobility of broilers, high dietary and food quality, which allows to achieve high productivity of poultry. The development of broiler poultry farming in Ukraine became possible due to the obtaining of high-performance poultry crosses, the use of a scientifically based feeding system, the use of modern containment technologies, the use of resource-saving technologies for the production of poultry products, concentration and specialization in the industry, which allows broiler enterprises to obtain a high yield of products, helps to increase the intensity of poultry growth and reduce their maintenance, reduce the cost of poultry

The second, no less important product of poultry farming, is the production of eggs. This direction is one of the most profitable activities in animal husbandry, and is an effective stimulus for its development and increase in production of poultry products. The production of eggs for a long period of time remains one of the most profitable. In particular, the annual production of eggs per person reaches more than 100% of 265 eggs – the norm of rational consumption [112].

Dynamics of egg production in Ukraine by forms of management indicates that in Ukraine it is gradually growing (Table 2.4). The increase in production volumes in recent years is carried out due to a sharp increase in chicken productivity, especially for large agricultural enterprises, due to the improvement of the breeding base and the balance and quality of feed.

Table 2.4

### Egg production in Ukraine

Years	Egg production, million pcs.					Egg production on one person, pcs.
	Farms of all categories	Agricultural enterprises	Specific weight, %	In households	Specific weight, %	
2000	8808,6	2977,3	33,8	5831,3	66,2	179
2005	13045,9	6458,1	49,5	6587,8	50,5	277
2010	17052,3	10249,6	60,1	6802,7	39,9	372
2013	19614,8	12234,2	62,4	7380,6	37,6	431
2014*	19094,1	12093,8	63,3	7000,3	36,7	443
2015*	19587,3	12536,2	64,0	7051,1	36,0	456
2020*	16782,9	9762,2	58,2	7020,7	41,8	392
2021*	15100,4	8067,6	53,4	7032,8	46,6	354
2022*	15505,8	8365,3	54,0	7140,5	46	365
2023*	16132,0	8900,3	55,1	7231,7	44,8	382
2023 to 2000, %	183,1	299,0	x	124,0	x	213,4

Source: Calculated according to the data from the State Statistics Service of Ukraine [106; 162-164]

\*Data are given excluding the temporarily occupied territories of the Autonomous Republic of Crimea and the city of Sevastopol, for 2014-2023 – also excluding part of temporarily occupied territories in Donetsk and Luhansk regions.

Thus, the production of poultry eggs of all types in all categories of farms of Ukraine in 2023 reached 16132.0 million pcs., including agricultural enterprises of all forms of ownership – 8900.3 million pcs., in farms of the population – 7231.7 million pcs. At the same time, it should be noted that the number of enterprises engaged in the production of eggs is reduced every year, with this happening mainly due to enterprises with a production volume of up to 500 thousand pcs. per year.

In the period 2000-2023 total egg production increased almost twice, mainly by increasing production at agricultural enterprises almost three times. The share of eggs produced in agricultural enterprises in their total number increased from 33.8% to 55.1%. At the same time, the production of eggs per person increased by 2 times – from 179 to 382 eggs.

The increase in the volume of egg production was due to the creation in Ukraine of highly technical, vertically integrated, powerful poultry enterprises. The use of high-performance crosses, new resource-saving technologies, optimized diets, modern zooveterinary measures allows to obtain high egg content of chickens [114].

The transfer of production in the industry to the industrial basis allows enterprises to develop at an accelerated pace, to introduce into production a deep processing of eggs with the production of a variety of products (including egg powder). The network of poultry farms is more or less evenly located in the regions of Ukraine, as evidenced by the concentration of egg production, which is depicted in Fig. 2.3.



**Fig. 2.3 Cartogram of egg production in Ukraine in 2023**

*Source: adapted [106; 164]*

From this figure it can be seen that the three leaders in the production of eggs include Kiev (2832,5 million pieces), Khmelnitsky (1308,4 million pieces) and Kherson (1024,9 million pieces) region. Next are Vinnytsia (945.7 million pieces) and Dnipropetrovsk (845.3 million units) region. This five regions

produce almost half (45%) of all-Ukrainian egg production. Egg production in comparison with the production of poultry meat also has a high degree of concentration of production, as evidenced by the data of table 2.5. During 2023, the number of enterprises engaged in the production of eggs is 381 business entity. Almost the entire total production volume (90.1%) is concentrated on 46 enterprises producing more than 50 million pieces. This also indicates the large-industrial maintenance of poultry, which is mainly concentrated in agricultural enterprises. Also, the use of high-performance crosses, new resource-saving technologies, optimized diets, modern zooveterinary measures has allowed for 2000-2023 significantly increase the egg content of chickens.

*Table 2.5*

**Grouping of agricultural enterprises by volume  
egg production, 2023**

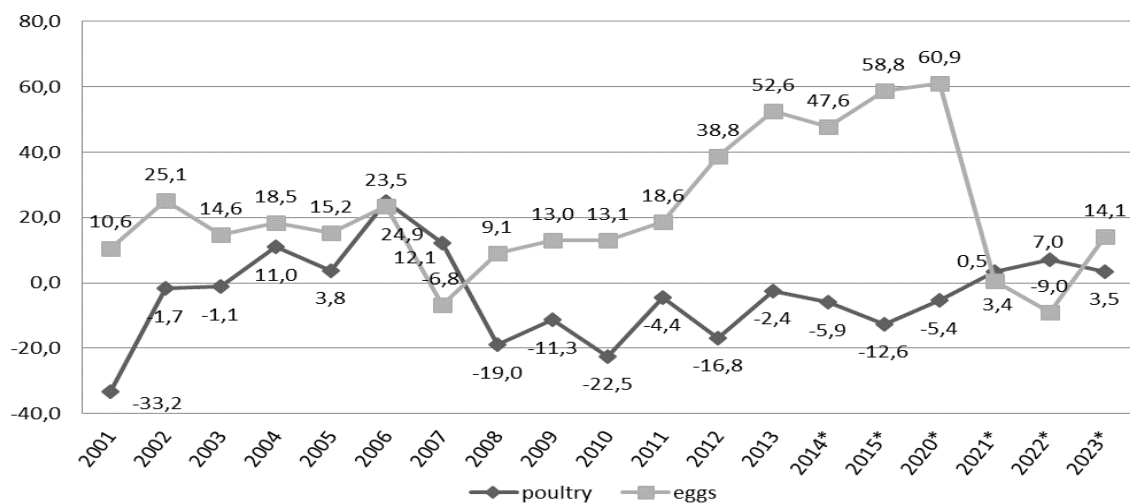
Groups	Number of enterprises		Eggs produced	
	units	in % to the total quantity	million pcs.	in % to the total quantity
Enterprises – total	381	100,0	8900,3	100,0
of them with a volume of, thousand pcs.				
up to 10,0	118	30,9	0,3	0,0
10,1-50,0	53	13,9	1,2	0,0
50,1-100,0	25	6,7	1,4	0,0
100,1-500,0	47	12,3	7,6	0,1
500,1-1000,0	9	2,4	6,1	0,1
1000,1-5000,0	20	5,2	71,9	0,8
5000,1-10000,0	24	6,3	108,3	1,3
10000,1-50000,0	39	10,2	631,9	7,5
more than 50000,0	46	12,1	8071,4	90,1

*Source: Calculated according to the data from the State Statistics Service of Ukraine [106; 164; 165]*

Thus, after analyzing the dynamics of poultry production, it should be noted that the increase in the volume of poultry production is possible only at the expense of large specialized enterprises that are able to organize year-round production on the basis of the equipment of the industrial herd, balanced feeding and ensuring technological requirements.

One of the generalizing indicators of economic efficiency of poultry enterprises is profitability. Investigating the dynamics of the profitability level

of poultry production, it should be noted that the production of poultry meat is gradually becoming profitable in contrast to the production of eggs, where the tendency to reduce the level of profitability is observed. The analysis of profitability of poultry production by enterprises in Ukraine shows that in 2001, meat production was unprofitable and profitability was 33.2%. Since 2004, there has been an increase in the profitability of meat production with a peak in 2006 of 24.9% (Fig. 2.4). However, the processes of monopolization of the market for the production of agricultural poultry meat, the import of cheap products from abroad, the deterioration of means of production have led to a decrease in the profitability of most enterprises and their bankruptcy.



**Fig. 2.4 The dynamics of the level of profitability of poultry products**

Source: Based on data from the State Statistics Service of Ukraine [106; 149-154; 165]

\*Data are given excluding the temporarily occupied territories of the Autonomous Republic of Crimea and the city of Sevastopol, for 2014-2023 – also excluding part of temporarily occupied territories in Donetsk and Luhansk regions.

Thus, for one year from 2007 to 2008, the profitability of production decreased from 12.1% to -19%. With the onset of the global economic crisis in 2008 and until 2020, there were fluctuations in the profitability of poultry meat production in a negative plane from -22.5% to -5.4% [51]. Since 2021, the profitability of poultry production has gradually begun to increase and today it has an indicator of 3.5%. Such processes are explained by the influence of both internal and external factors that lead to the instability of the market situation. Large producers, having significant financial reserves, carry out their own

strategies to displace competitors, periodically reducing the price of their products and monopolizing the market [134].

The opposite situation in the production of poultry meat is noted with the profitability of food eggs, where, since 2001, the production of food eggs was profitable. Thus, if in 2000 this figure was 10.6%, then in 2006 the profitability increased to 24.9% and it peaked in 2020 at a profitability level of 60.9%. In 2023 the profitability of the production of food eggs is 14.1%. This was due to an increase in cost as a result of increasing production costs. First of all, this is due to the sharp increase in grain prices, which constitutes the largest part of the feed mixture of poultry; secondly – with an increase in the price of energy resources, thirdly – with a decrease in the level of egg consumption in Ukraine. Low purchasing power of the population encourages producers to actively export products to foreign markets. The fall in production volumes is directly related to a decrease in domestic sales due to market losses in controlled territories, a decrease in population and a decrease in its purchasing power. Further complication of the economic situation in the country leads to a decrease in real incomes and a reduction in the fund of egg consumption, which in turn affects the production of industrial enterprises. Today, the growth rate of production costs exceeds the rate of increase in sales prices. At the same time, 46% of the total production of eggs falls on the economy of the population, and this has a significant impact on the pricing processes in the industry [112].

Thus, having analyzed the current state of poultry farming in Ukraine, there is reason to argue that Ukrainian poultry farming is stepping confidently to the European level. In general, there is a rapid development of the poultry industry in Ukraine, a tendency to increase poultry livestock, poultry meat production and egg production is noted. This is primarily due to the increase in demand from the population and food industry. In addition, poultry meat has become a substitute for most consumers of meat of other types of meat due to the fact that in recent years there has been a significant reduction in the supply of meat of cattle and pigs, and, accordingly, prices for them also increase.

## 2.2. Peculiarities of economic efficiency of production by poultry enterprises

Poultry farming is widely developed throughout Ukraine. An important factor in the placement of poultry is the focus on the consumer. Today, poultry production is observed in forest-steppe and steppe zones, where grain production is developed, and is increasingly concentrated in large specialized enterprises located mainly near large cities and industrial centers, and has a high degree of vertical integration. This is evidenced by the analysis of the dynamics of the poultry population in 2023 (Table 2.1).

Table 2.6

### Structure of poultry production by regions of Ukraine (in slaughter mass)

Name of the region	2000			2023			2023 to 2000, %
	Meat produced in all categories of farms, thousand tons	%	share of meat in agricultural enterprises, %	Meat produced in all categories of farms, thousand tons	%	share of meat in agricultural enterprises, %	
Ukraine	183,7	100	18,8	1258,9	100	86,2	685,3
Vinnitsia	10,2	5,6	22,5	306,5	24,3	97,5	3029,4
Volyn	3,6	2,0	2,8	67,2	5,3	93,4	1866,7
Dnipropetrov	18,0	9,8	53,3	206,1	16,4	95,6	1145,0
Donetsk	16,2	8,8	25,3	12,7	1,1	29,1	78,4
Zhytomyr	7,3	4,0	8,2	10,2	0,8	10,8	139,7
Transcarpathian	3,8	2,1	-	5,6	0,4	-	147,3
Zaporizhzhia	8,5	4,6	7,1	11,2	0,9	59,0	131,7
Ivano-Frankivsk	6,5	3,5	6,2	21,1	1,7	59,7	324,6
Kyiv	23,3	12,7	32,6	141,9	11,3	84,6	609,0
Kirovohrad	3,9	2,1	5,1	10,5	0,8	-	269,2
Luhansk	7,6	4,1	22,4	1,7	0,1	-	22,4
Lviv	8,9	4,8	4,5	53,8	4,3	84,0	604,5
Mykolaiv	3,9	2,1	17,9	5,9	0,5	10,2	151,2
Odessa	11,1	6,0	9,9	2,3	0,2	4,3	20,7
Poltava	7,2	4,0	13,9	5,8	0,5	5,2	80,5
Rivne	4,0	2,2	5,0	24,4	1,9	60,6	610,0
Sumy	5,3	3,0	7,5	15,4	1,2	38,3	290,5
Ternopil	4,4	2,4	2,3	9,6	0,8	52,1	218,2
Kharkiv	11,1	6,0	5,4	32,9	2,6	52,9	296,3
Kherson	5,4	3,0	13,0	5,1	0,4	37,2	94,4
Khmelnitsky	1,9	1,0	5,3	14,7	1,2	80,3	773,7
Cherkasy	7,3	3,9	24,7	278,4	22,1	97,3	3813,7
Chernivtsi	2,0	1,1	-	12,9	1,0	78,2	645,0
Chernihiv	2,3	1,2	13,0	3,0	0,2	3,3	130,4

Source: Calculated according to the data from the State Statistics Service of Ukraine [106;

162; 164]

The structure of egg production by regions of Ukraine (Table 2.7) indicates that more than half of all eggs (55.1%) are also produced at large specialized agricultural enterprises. The largest share of eggs in agricultural enterprises in 2023 was obtained in Kherson (84%), Kyiv (81.8%), Zaporizhzhya (74.4%), Poltava (72.8%), Dnipropetrovsk (70.1%) and Khmelnytsky (66.5%) and regions.

Table 2.7

**Egg production structure by regions of Ukraine**

Name of the region	2000			2023			2023 to 2000 at %
	Eggs produced in all categories of farms, thousand pcs	%	share of eggs in agricultural enterprises, %	Eggs produced in all categories of farms, thousand pcs	%	share of eggs in agricultural enterprises, %	
Ukraine	8361,5	100	33,0	16132,0	100	55,1	193,0
Vinnytsia	348,8	4,2	11,5	914,6	5,4	40,5	262,2
Volyn	158,5	1,9	5	203,0	1,3	11,6	128,0
Dnipropetrov	436,9	5,2	30,6	845,3	5,5	67,3	193,5
Donetsk	854,1	10,2	54,5	696,2	4,3	58,6	81,5
Zhytomyr	270,7	3,2	15	695,8	4,3	12,5	257,0
Transcarpathian	229,7	2,7	0,7	391,0	2,4	0,2	170,2
Zaporizhzhia	345,2	4,1	50,6	667,1	4,1	74,4	193,2
Ivano-Frankivsk	236,1	2,8	11,2	423,0	2,6	40,6	179,1
Kyiv	787,2	9,4	60,5	3244,5	20,1	81,8	412,1
Kirovohrad	179,0	2,1	4,2	462,5	3,0	1,8	258,3
Luhansk	380,3	4,5	64,5	72,2	0,4	-	19,0
Lviv	465,9	5,6	11,9	561,5	3,5	10,1	120,5
Mykolaiv	164,2	2,0	31,4	240,1	1,5	44,8	146,2
Odessa	656,8	7,9	29,8	251,8	1,6	5,6	38,3
Poltava	404,7	4,8	63,3	809,8	5,0	72,8	200,0
Rivne	194,2	2,3	29,6	623,9	3,9	40,6	321,3
Sumy	284,7	3,4	29,1	390,8	2,4	35,8	137,2
Ternopil	234,5	2,8	9	534,5	3,3	54,7	227,9
Kharkiv	479,3	5,7	34,9	603,6	3,7	40,7	126,0
Kherson	189,8	2,3	26,6	1126,5	7,0	84,0	539,5
Khmelnysky	159,6	1,9	14,5	1089,7	6,7	66,5	682,7
Cherkasy	379,0	4,5	33,5	659,8	4,1	56,9	174,0
Chernivtsi	183,0	2,2	1,5	336,4	2,1	-	183,8
Chernihiv	339,3	4,1	13,9	288,4	1,8	17,2	84,9

Source: Calculated according to the data from the State Statistics Service of Ukraine [106; 162; 164]

The highest rate of increase in egg production in 2023 compared to 2000, more than 2 times, observed in Khmelnytsky (6.8 times), Kherson (5.3 times), Kyiv (4.1 times), Rivne (3.2 times), Vinnytsia (2.6 times), Zhytomyr and

Kirovohrad (2.5 times), Ternopil (2.2 times) and Poltava (2 times) regions. They have for 2000-2014 large poultry farms were built, which ensured a significant increase in egg production.

Especially intensive poultry farming in Dnipropetrovsk region, which is among the leaders of the industry. The studied region has a great resource potential for the development of meat poultry. First of all, these are sufficient volumes of grain production, which form the basis of the production of mixed fodders for poultry, as evidenced by the analysis of the level of meat production per 100 hectares of grain crops (Table 2.8). Secondly, the region has the appropriate potential capabilities (the presence of large vertically-interactive enterprises, the use of new technologies in enterprises that can reduce production costs and improve the quality of manufactured products), which allow you to produce the required amount of products not only for internal needs, but also for the needs of other regions.

*Table 2.8*

**Production of poultry meat per 100 hectares of grain crops, q**

Indicators	1990	1995	2000	2005	2010	2015	2023	2023 to 2000 at %
Ukraine	48,5	16,6	14,1	33,1	65,0	78,9	89,5	634,7
Dnipropetrovsk region	28,3	11,4	9,8	19,1	30,9	41,9	58,4	768,4

*Source: calculated according to the data of the Main Department of Statistics in the Dnipropetrovsk region [29; 106]*

According to the calculations, the level of poultry production in Ukraine in 1990 was 48.5 c/100 ha of grain crops, and in the Dnipropetrovsk region – 28.3 centners, which indicates a high level of use of resource potential in the studied region. But unfortunately, the reforms of the 90s contributed to a reduction in production volumes, as evidenced by a gradual decrease in the level of meat production of prika in Ukraine to 14.1 centner per 100 hectares of grain crops, and in the studied region – to 9.8 tsp. At the time, the resource potential that Ukraine, including the Dnipropetrovsk region, did not fully use to increase meat production volumes Since 2000. the level of poultry production in Ukraine

gradually increases – from 14.1 to 89.5 centners, and in the Dnipropetrovsk region from 9.8 to 58.4 centners. This indicates that in the investigated region, the level of poultry meat production reaches more than half the average level in the country. This level of poultry production contributed to the availability and adequacy of feed resources, temperate climate, highly skilled personnel, the creation of new, high-tech and vertically integrated poultry enterprises. This condition has a positive effect on the rating indicators of the volumes and results of poultry enterprises in the region.

Today, poultry farming in the studied region is concentrated in 12 areas that are close to the regional center. This fact is due to the fact that economic activity here is more effective than in remote areas (proximity to the main market, which causes a decrease in costs for main production). The structure of poultry livestock maintenance in the districts of Dnipropetrovsk region in 2023 characterized by the intensity of changes in the indicators of the investigated series of dynamics of 2012-2023 years. (Table 2.9

Table 2.9

**Dynamics of the poultry population of all species at enterprises in the Dnipropetrovsk region**

Districts	Livestock, thousand head.				Average absolute growth ( $\bar{A}$ ), head.	Average growth rate ( $\bar{K}$ ), %	Average growth rate ( $\bar{T}$ ), %
	Years						
	2012	2014	2020	2023			
Dnipropetrovsk	668,3	679,7	838,3	1024,2	118,63	115,74	15,74
Kryvyi Rih	523	628,1	614,5	635,1	37,37	67,06	-32,94
Magdaliniivskiyi	2677,7	3141,9	3075,6	3206,3	176,20	104,87	6,49
Nikopolskyi	3109,2	3176,2	3119,1	3337,4	76,07	103,27	3,27
Novomoskovskiyi	5,1	3,6	5,2	6,1	0,33	97,39	-2,61
Petrykivskiyi	3872	3331,3	3185	3552,6	-106,47	86,68	-13,32
Petropavlovskiyi	2,1	3,3	4,2	5,4	1,10	137,66	37,66
Pokrovskiyi	4,1	2,6	2,3	3,1	-0,33	46,34	-53,66
Sinelnikovskiyi	11,9	13,3	5,1	5,2	-2,23	84,02	-15,98
Solonyanskyyi	3,5	2,3	1,3	191,2	62,57	4943,31	4843,31
Tomakivskyyi	125,2	548,8	577,3	574,3	149,70	214,34	114,34
Yur'yivskyyi	7,5	8,1	8,2	9,3	0,60	107,55	7,55
Dnipropetrovsk region	11009,6	11539,2	11436,1	12550,2	513,53	104,55	4,55

Source: calculated according to the data of the Main Department of Statistics in the Dnipropetrovsk region [29; 145-148 ]

Negative indicators of changes in dynamics were Kryvyi Rih, Petrykivskiy, Pokrovskiy, Sinelnikivskiy and Solonyanskyy districts. The average tempo can only be calculated in cases where the pace of the dynamic series continuously increases or decreases. When the rates fluctuate in different directions, the average rate calculated by them is a very conditional value. Investigating the development of the poultry industry in the Dnipropetrovsk region should be noted about the increase in the production of gross poultry production (Table 2.10).

Table 2.10

**Dynamics of production of poultry products at enterprises in the Dnipropetrovsk region**

Districts	Years				2023 to 2012 at %
	2012	2014	2020	2023	
Meat production, thousand tons.					
Dnipropetrovsk	13,27	15,09	17,89	21,45	161,6
Kryvyi Rih	10,36	12,98	11,23	11,60	111,9
Magdalinivskiy	539,60	657,75	648,19	671,34	124,4
Nikopolskiy	652,83	668,09	662,31	703,70	107,8
Novomoskovskiy	0,32	0,25	0,52	0,61	190,6
Petrykivskiy	736,65	640,12	635,58	641,41	87,1
Petropavlovskiy	0,05	0,07	0,08	0,10	200,0
Pokrovskiy	0,14	0,06	0,05	0,07	50,0
Sinelnikivskiy	1,42	1,60	0,60	0,62	43,7
Solonyanskyy	0,07	0,05	0,02	3,40	4857,1
Tomakivskiy	5,39	5,96	6,38	6,35	117,8
Yur'yivskiy	0,30	0,32	0,33	0,37	123,3
Dnipropetrovsk region	1960,40	2002,34	1983,18	2061,02	105,1
Production of eggs, million pcs.					
Dnipropetrovsk	378,2	287,4	313,4	321,8	85,1
Kryvyi Rih	325,1	313,9	389,2	357,6	109,9
Magdalinivskiy	7,4	4,3	8,4	26,5	358,1
Tomakivskiy	117,1	130,5	128,1	139,4	119,0
Dnipropetrovsk region	827,8	736,1	839,1	845,3	102,1

*Source: calculated according to the data of the Main Department of Statistics in the Dnipropetrovsk region [29; 145-148 ]*

For the period of 2012-2023 years. poultry enterprises increased meat production by 5.1% and eggs by 2.1% more than in 2012. This indicates that

poultry farming in the region is developing due to the intensification of production.

The poultry industry of Dnipropetrovsk region today is represented by 31 poultry companies that produce chicken broiler meat, poultry and egg processing products. For a more complete understanding of the economic efficiency of the production and sale of eggs and poultry meat at the poultry enterprises of the region, we will analyze the main indicators – profit and profitability (Table 2.11).

*Table 2.11*

**Economic efficiency of production and sale of poultry products at enterprises of the Dnipropetrovsk region**

Indicators	2012	2014	2020	20233	2023 to 2012 at %
Feed costs:					
- for 1000 pcs. eggs, centners of feed units	1,80	1,73	1,76	1,75	97,2
- for 1 cwt germination of young birds, centners of feed units	6,0	5,3	5,1	4,9	81,7
Labour intensity:					
- per 1000 pcs. eggs, MH	2,29	2,40	2,45	2,16	94,3
- per 1 cwt of young poultry growth, MH.	11,90	11,30	10,95	8,65	72,7
Egg production, thousand pcs.	281	297	289	290	103,2
Average daily growth of young birds, gr.	43	48	47	47	109,3
Full cost, UAH:					
- 1000 pcs. eggs	365,8	451,3	651,8	1202,8	328,8
- 1 cwt poultry meat	1345,4	1069,7	1589,5	2360,2	175,4
Sale price, UAH:					
- 1000 pcs. eggs	498,0	621,7	840,5	1541,2	309,5
- 1 cwt poultry meat	669,1	755,2	1827,6	2533,6	378,6
Profit (loss), thousand UAH:					
- per 1000 pcs. eggs	132,2	170,4	188,7	338,4	255,9
- 1 cwt poultry meat	-676,3	-341,5	238,1	173,4	25,6
Profitability, %:					
- 1000 pcs. eggs	36,1	37,8	28,9	28,1	-
- 1 cwt poultry meat	-50,2	-31,9	15,0	7,3	-

*Source: calculated according to the data of the Main Department of Statistics in the Dnipropetrovsk region [29; 145-148]*

Analysis of the profit received from the sale of 1000 pcs. eggs indicate that its size during the study period increased 2.5 times. This was facilitated by

intensive farming, namely reducing feed consumption by 2.8% and increasing the productivity of laying hens by 3.2%. For 2012-2023 years. at poultry enterprises in the region, the profitability level for egg production is on average 32.7% and poultry meat is -14.9%. Indicators of meat sales indicate that this type of activity is unprofitable. This is due to the fact that due to lack of working capital, high energy intensity and technology of the industry, the enterprise is not able to conduct an expanded reproduction of production, that is, they do not have the opportunity to buy modern equipment and equipment, high-performance poultry crosses, high-quality feed, medicines, etc. In the end, this leads to a decrease in the efficiency of poultry production. The experience of conducting economic activities gives reason to argue that for extended reproduction of production, the level of profitability should be within 35 – 45%.

It is impossible to achieve high production efficiency of poultry production only by reducing costs and increasing production in gross volume. Here the quality of products is also of great importance. Loss of funds of birds carry not only from production, but also from the sale of low-quality eggs. Studies show that not all eggs produced by enterprises are sold. About 13% of eggs remain unrealized due to lack, inconsistency, sloppy appearance and poor quality. However, it is this category of eggs that can allow the enterprise to increase profits.

Savings due to the scale of production, marketing and logistics can become a significant source of competitive advantage of individual poultry farms for the production of poultry meat. It is achieved as a result of reducing the specific weight of constant production costs per 1 ton of cultivation products and as a result of the more rational use of specialized equipment for material and technical supply and sale of products. To invest in the registration and certification of goods in order to enter the foreign market can mainly large enterprises.

Studying the dynamics of changes in the main performance indicators of poultry farming enterprises, it is advisable to group poultry enterprises according to their size (Table 2.12), which will determine the impact of

production concentration on the indicators of economic efficiency of poultry production at poultry enterprises of the region.

Table 2.12

**Grouping of enterprises of the Dnipropetrovsk region  
by poultry population, 2023**

Indicators	Enterprise groups by poultry population				Total
	up to 500 thousand head.	0.5-1.0 million head.	1.0-3.0 million head.	over 3.0 million head.	
Number of enterprises	21	6	3	1	31
Poultry population, thousand head.	1244,5	3972,5	3780,6	3552,6	12550,2
Poultry population per enterprise, thousand head.	59,3	662,1	1260,2	3552,6	404,8
Meat production, thousand cwt.	26,6	715,3	677,7	641,4	2061,0
Meat production per enterprise, thousand cwt.	1,3	119,2	225,9	641,4	66,5
Production of eggs, million pcs.	321,8	357,6	165,9	-	845,3
Production of eggs per enterprise, million pcs.	15,3	59,6	55,3	-	27,3
Sold meat, thousand cwt.	25,4	684,0	647,9	613,2	1970,5
Meat was sold for one enterprise, thousand cwt.	1,2	108,0	215,9	631,2	63,6
Eggs sold, million pcs.	310,6	345,2	160,1	-	815,9
Eggs were sold per enterprise, million pcs.	14,8	57,5	53,4	-	26,3
Average weight 1 goal. poultry, kg	2,1	1,8	1,7	1,8	1,6
Annual production of cultivation per 1 head, kg	2,1	18,0	17,9	18,1	16,4
Annual productivity of laying hens, pcs.	258	285	274	-	272
Production cost, UAH:	2309,8	2054,2	2102,4	1873,6	2017,1
- 1 cwt. meat					
- 1000 pcs. eggs	863,5	1095,1	768,7	-	942,8
Total cost of, UAH:	2651,5	2227,9	2451,5	2109,8	2270,1
- 1 cwt. meat					
- 1000 pcs. eggs	1193,4	1382,8	1032,2	-	1241,9
Sales price, UAH:	2512,1	2323,9	2675,0	2623,5	2535,0
- 1 cwt. meat					
- 1000 pcs. eggs	1577,5	1425,3	1620,4	-	1521,5
Profit (loss), UAH:	-139,4	96,0	223,5	216,7	172,4
- 1 cwt. meat					
- 1000 pcs. eggs	384,1	42,5	588,2	-	279,6
Profitability level, %:	-5,2	4,3	9,1	10,2	7,6
- 1 cwt. meat					
- 1000 pcs. eggs	32,2	64,0	56,9	-	22,5

Source: calculated by the author based on the production reports of enterprises

Analysis of table data 2.12 shows that the increase in the concentration of poultry livestock at the poultry enterprises of the studied region in 2023. contributed to a significant increase in the economic efficiency of the production of poultry and eggs. In the enterprises of I – IV groups with an increase in poultry livestock at poultry enterprises, there was an increase in annual poultry production per head from 2.1 to 18.1 kg and annual productivity of laying hens from 258 to 285 eggs. At the same time, there was a decrease in the production cost of poultry production.

Thus, at enterprises that had an average annual poultry population of less than 500 thousand heads, the production cost of poultry production was almost 1.2 times higher compared to enterprises that had an average annual poultry population of more than 600 thousand heads, which ensured profitable production and a high level of profitability. This is due to the fact that large enterprises with a high concentration of production use innovative technologies for growing and maintaining poultry, which positively affects the increase in annual poultry production per head. As a rule, they are technically equipped, powerful and roomy, that is, they contain both traditional (pavilions) and new (blocked in horizontal and vertical planes) aviaries. Accordingly, such enterprises have significantly higher productivity and, accordingly, lower cost of production. They are usually highly profitable.

To identify factors and their levels that ensure effective production of poultry products in the region, we will group poultry enterprises according to the level of production cost of poultry production. The research shows that the vast majority of poultry enterprises that had in 2023 production cost of 1 c of poultry production more than 3000 UAH. were unprofitable, since the average price of sales of poultry production was 2845,3 UAH. for 1 ts. At the same time, in the structure of expenses, feed occupied an average of 75.6%, wages – 4.4%, petroleum products – 1.5% of the total costs (Table 2.13).

The main reason for the loss of poultry production in these enterprises was the low level of poultry productivity (annual production of growing for 1 goal was less than 3 kg) at sufficiently high production costs per head of poultry.

At the same time, in the structure of expenses, feed occupied an average of 63.4%, wages – 5.7%, petroleum products – 2.3% of the total costs.

It is also advisable to group agricultural enterprises according to the level of profitability of their production to identify factors that ensure effective production of poultry products in the investigated region.

*Table 2.13*

**Grouping of enterprises of the Dnipropetrovsk region  
according to the level of production cost of poultry production, 2023**

Indicator	Groups of enterprises by the level of production cost of poultry production, UAH				Total
	to 2000	2000-2500	2500-3000	over 3,000	
Number of enterprises	4	7	6	14	31
Poultry population, thousand head.	7333,2	1209,4	3787,3	220,3	12550,2
Poultry population per enterprise, thousand head.	1566,1	172,8	631,2	15,7	404,8
Meat production, thousand cwt.	1119,1	217,9	718,8	5,2	2061,0
Sold meat, thousand cwt.	1061,1	216,8	687,8	4,9	1970,5
Average weight 1 goal. poultry, kg	1,5	1,8	1,8	2,3	1,6
Annual production of cultivation per 1 head, kg	15,3	8,0	18,9	2,4	16,4
Production costs for 1 head of poultry, UAH.	188,9	220,8	223,7	268,6	216,6
Production cost of 1 cwt. meat, UAH.	1856,4	2206,8	2547,3	3193,6	2137,8
Full cost of 1 cwt. meat, UAH.	2091,8	2399,7	2759,4	3287,2	2360,2
Sale price 1 cwt. meat, UAH.	2498,9	2154,3	2964,7	2845,3	2624,6
Profit (loss) per 1 cwt. meat UAH.	407,1	-254,4	205,3	-441,9	261,8
Profit (loss) in total, million UAH.	413,9	-53,2	141,2	-2,1	515,8
Profitability level, %	19,5	-10,6	7,4	-13,4	11,1

*Source: calculated by the author based on the production reports of enterprises*

In 2023 in more than 29% of poultry enterprises of their total quantity, the production of this product was unprofitable and they produced 5.4% of the total volume of meat (Table 2.14).

The main reason for the loss of production in these enterprises was also the low level of poultry productivity (the average weight of 1 chicken was 1.4 kg) at fairly high production costs per head of poultry. At the same time, in the structure of expenses, feed occupied an average of 66.0%, wages – 7.5%,

petroleum products – 2.6% of the total costs. However, most enterprises (II-IV group), which is 71% of their total number, were profitable, in which the level of profitability ranged from 11.7% to 57.2%.

The profitability of production was positively influenced by both poultry productivity and rational use of resources. Thus, in enterprises that had a level of profitability of production of growing products over 50.0% (IV group), the average weight of 1 chicken was the highest of the allocated groups (1.9 kg).

*Table 2.14*

**Grouping of enterprises of the Dnipropetrovsk region by level  
profitability of poultry production, 2023**

Indicator	Groups of enterprises by the level of profitability of poultry production, %				Total
	unprofitable	0-25	25-50	over 50	
Number of enterprises	9	14	6	2	31
Poultry population, thousand head.	794,6	6962,7	2655,4	2137,5	12550,2
Poultry population per enterprise, thousand head.	88,3	497,3	442,6	1068,7	404,8
Meat production, thousand cwt.	111,5	1069,2	523,1	357,2	2061,0
Sold meat, thousand cwt	110,9	1027,0	496,2	336,4	1970,5
Average weight 1 goal. poultry, kg	1,4	1,5	1,7	1,9	1,7
Production cost of 1 tsp. meat, UAH.	3245,8	1953,6	2134,7	1895,4	1996,7
Production costs for 1 head of poultry, UAH:	325,3	200,0	221,3	186,3	210,1
- including feed	216,3	131,7	142,1	114,2	136,3
- petroleum products	8,6	4,6	4,5	3,7	4,7
- payment for services and works of third-party organizations	13,2	8,4	9,6	10,5	9,3
- the rest of the material costs	30,5	25,4	31,9	17,7	25,8
- direct labour costs	24,4	10,8	7,1	5,8	8,7
- depreciation of non-current assets	14,5	11,7	10,3	15,1	12,2
- deductions for social events	8,8	2,6	2,8	2,1	2,9
- the rest of other direct and general production costs	9,0	4,8	13,0	17,2	8,9
Full cost of 1 tsp. meat products, UAH.	3393,8	2010,6	2293,0	1980,3	2151,8
Sale price 1 tsp. meat, UAH:	2902,5	2247,1	2892,4	3112,5	2594,2
Profit (loss) per 1 tsp. meat UAH.	-491,3	236,5	559,4	1132,2	429,8
Profit (loss) total, million UAH.	-54,5	242,9	277,5	308,8	846,9
Profitability level, %	-14,5	11,7	26,1	57,2	19,9

*Source: calculated by the author based on the production reports of enterprises*

At the same time, production costs for 1 head of poultry in this group were the lowest. It should be noted that the introduction of mechanization and automation of production processes at positive enterprises affect the results of production, namely, increase labor productivity and reduce the production cost of products. Thus, in enterprises that had a profitability level of more than 50.0% (IV Group), in the structure of costs for one hen-laying oil products took 1.9% against 2.6% in the enterprises of the I Group. At the same time, labor costs in the structure of total costs at poultry enterprises of the I Group were 7.5% against 3.1% in the enterprises of the IV Group.

The analysis indicates that the efficiency of the functioning of modern poultry farming enterprises in many ways determines not only the concentration of production, but also the presence of technology and technologies, premises, complexes and innovative approaches to saving and optimizing production resources. After all, saving production resources on the condition of technological equipment makes it possible to effectively develop modern poultry enterprises and increase their profitability. Conversely, in the presence of a large number of employees and lack of equipment, the enterprise will function inefficiently or unprofitably.

### **2.3. Efficiency of production management in the system of industrial poultry farming**

The poultry market occupies one of the leading positions in the list of agricultural markets in the world, which are rapidly developing. Modern management of industrial poultry industry reached a qualitatively new level. And the issue of effective management in the system of economic relations always regulates the achievement of the main economic mission of any enterprise – profit. Therefore, it is a priority and necessary in the modern dimension of competitiveness of the business environment.

Both around the world and in our country, targeted breeding work is underway to increase its potential, meat and egg direction. Poultry have the highest effect of converting plant protein into animal protein, unlike cattle and

pigs. Having unique qualities of self-sufficiency, the bird has high intensification rates. In the production of one kilogram of egg mass or broiler meat, the feed conversion is less than two units, for the production of one kilogram of pork it is required – 4-5 kg of feed, beef 7-10 kg.

Today, 31 poultry enterprises operate in the Dnipropetrovsk region, including 6 large enterprises of egg direction and 4 meat. From the point of view of the level of consumption, as well as the volume of production, in general, one can conclude about the advantage of consumption of poultry products in several times in relation to other types of meat. This factor is an absolute advantage for poultry enterprises in Dnipropetrovsk region. In addition, it should be noted that the feeds that make up the bulk of the diet are grown locally, which allows to optimize their cost.

The increase in consumption of chicken meat, more precisely to say its replacement with beef and pork, is associated with the economic crisis, as well as with the low incomes of the majority of the population of the region. However, in this area, there is instability both within production and at the stage of product distribution to the end consumer.

The main task of any agricultural enterprise is to meet the needs of consumers in food. If in a competitive economy, the agro-industrial complex fails to meet the demand of consumers, it is doomed to extinction. On the other hand, manufacturers whose products meet the requirements of consumers are best positioned to grow and thrive. At the same time, the enterprise, making a profit, should take into account the interests of employees, owners of the enterprise, its creditors and other persons. Only under these conditions is effective development possible.

There is no doubt that effective development is directly proportional to effective management. That is why the leaders of many poultry enterprises come to the conclusion that a strategic approach to production management is necessary. The strategy, as a long-term measure, should be an optimal synthesis of a set of active ideas, real solutions and professional ones, constantly improving the approach at all stages of the production process. The implementation of the strategy is possible only with the close interaction of all

subsystems that form the poultry enterprise, starting with the purchase or production of feed, ending with the management system.

With significant natural resources, as well as developing within the framework of the poultry support program, it is necessary to optimize production and improve the performance of poultry enterprises in the Dnipropetrovsk region. The optimization process must begin with an analysis of the work of enterprises, identifying efficiency factors and in parallel problems leading to a decrease in production indicators. This approach to production management at the enterprise involves the allocation of a special logistics service. Today, even at large poultry farms in the Dnipropetrovsk region, logistics functions are performed by various departments. At the same time, the goals of a separate unit, as a rule, do not coincide with the goals of rational organization of the combined production process. The logistic approach to production management involves a close interaction of logistics, production planning and marketing, starting with the conduct of selection work, ending with the receipt of finished products to the end consumer.

In the poultry market of the Dnipropetrovsk region there is serious competition not only between local poultry enterprises, but also producers of neighboring regions. The difference in the level of prices, product quality, design and attractiveness of packaging materials plays a decisive role in the preferences of consumers. Management services should strive for the most satisfactory result, constantly analyzing changes in demand for products. By constantly monitoring the performance of all components of the production chain, as well as making forecasts for subsequent periods of time, logistics workers use various mathematical, statistical and econometric methods and models of analysis. Using this research device, we have clear and certainly more accurate information about the state of the enterprise at the moment or for the predicted period of time.

Numerous microeconomic studies have shown that the allocation of a separate logistics service at the enterprise will lead to a significant reduction in costs and costs at all stages of its activities, which means a decrease in the cost of output and, therefore, an increase in profit, which is the main task of the enterprise. Only poultry enterprises can function successfully, which rationally use material resources and receive the finished product at a lower cost.

In the context of the main tasks of this study, we will identify and analyze the main factors that affect the effectiveness of poultry enterprises. Due to the growth in the number of poultry enterprises, the current trend of acute shortages of poultry products, namely eggs or broiler meat, has decreased in the near past. However, Dnipropetrovsk region is only in fifth place in egg production and in third place in poultry production. In the region, there are all prerequisites for improving the performance of industry work, namely: it has rich natural resources and is developing within the framework of the poultry support program, thus, the stage of the need to optimize production is updated. The starting point of the optimization process should be considered – the initial analysis of the work of poultry enterprises (Table 2.15). In order to analyze these tables, it is necessary to move from quantitative characteristics to characteristics of production quality [141].

Table 2.15

**The main indicators of the activity of poultry enterprises of the Dnipropetrovsk region, 2023**

Company name	Gross egg production, thousand pcs.	Egg production, pcs.	Average weight of 1 bird head sold for meat, kg	Sale of meat, i.e.	Poultry stock, thousand head.	Average annual population of laying hens, thousand head.	Feed costs, cwt of feed units	% of the bird's fall
	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	C <sub>6</sub>	C <sub>7</sub>	C <sub>8</sub>
PPF "Agrocenter"	48973	282	1,7	462,7	452,3	173,2	1,42	7,6
"AVIAS-2000" LLC	35238	286	1,9	429	460	123,3	1,27	7,2
LLC "Marganetska Poultry Factory"	2806515	299	2,1	1065	1262,1	939,1	1,31	4,6
"Agrofirma Dnipropetrovsk" LLC	159399	320	1,85	885	745	497,7	1,37	9,3
LLC "Lozuvat Poultry Factory"	111142	328	1,75	334	361	338,6	1,62	12,6

Source: calculated based on production reports of enterprises of the Dnipropetrovsk region

We will determine for each enterprise the indicators characterizing its economic condition.

Laying on the average annual laying hen for the year (productivity)  $P_1$ :

$$P_1 = \frac{C_2}{365} \times 100 \% \quad (2.1)$$

where  $C_2$  – egg production per average annual laying hen per year, calculated according to the formula:

$$\text{Egg production} = \frac{C_1}{C_6} \quad (2.2)$$

2 . Percentage of laying hens of total stock, including poultry, which is culled for slaughter  $P_2$  (preservation of the herd) without falling poultry:

$$P_2 = \frac{C_6}{\frac{C_4}{C_3} + C_5} \times 100 \% \quad (2.3)$$

3 . As an indicator  $P_3$  consider the indicator  $C_7$  (feed costs).

4. Fall percentage  $P_4$  corresponds to the indicator  $C_8$  from Table 2.15.

Having performed calculations according to formulas (2.1), (2.3), let's fill out a table of the main characteristics of the economic condition of poultry enterprises (Table 2.16)

*Table 2.16*

**The main characteristics of the economic condition of poultry enterprises of the Dnipropetrovsk region**

Company name	$P_1$	$P_2$	$P_3$	$P_4$
PPF "Agrocenter"	77,26	23,90	1,42	7,6
"AVIAS-2000" LLC	78,35	17,98	1,27	7,2
LLC "Marganetska Poultry Factory"	81,91	53,08	1,31	4,6
"Agrofirma Dnipropetrovsk" LLC	87,75	40,68	1,37	9,3
LLC "Lozuvat Poultry Factory"	89,86	61,36	1,62	12,6

*Source: calculated based on production reports of enterprises of the Dnipropetrovsk region*

Next, in order to obtain absolute estimates of the results of the researched poultry enterprises, we calculate the  $P_j^i$  indicators as the ratio of the achieved results of work to the best results from the whole population. Let's take into account that the smaller the value in the  $P_3$  and  $P_4$  columns, the better the results of the enterprise.

The next step is to substitute the data of table 2.16 into the formulas:

$$P_j = \begin{cases} \frac{P_j^i}{P_{j_{\max}}}, & \text{if } j = 1,2 \\ \frac{P_{j_{\min}}}{P_j^i}, & \text{if } j = 3,4 \end{cases} \quad (2.4)$$

and we get a new table of indicators for each enterprise (Table 2.17).

Cells of the table, the elements of which are units, indicate the highest results achieved in a particular area of activity of the poultry enterprise. Thus, the closer the indicator to one, the more efficient its work. But simply summarizing the obtained values to determine the effectiveness of the functioning of the enterprise is economically incorrect.

*Table 2.17*

**Absolute assessments of the results of poultry enterprises  
Dnipropetrovsk region**

Company name	$P_1^i$	$P_2^i$	$P_3^i$	$P_4^i$
PPF "Agrocenter"	0,859	0,389	0,894	0,605
"AVIAS-2000" LLC	0,872	0,293	1	0,639
LLC "Marganetska Poultry Factory"	0,911	0,865	0,969	1
"Agrofirma Dnipropetrovsk" LLC	0,976	0,076	0,927	0,494
LLC "Lozuvat Poultry Factory"	1	1	0,783	0,365

*Source: calculated by the author*

It is necessary to differentiate each factor by the strength of its influence on the production process. To do this, we apply one of the methods for analyzing hierarchies [139].

Using the expert analysis method, we will find weighted average estimates for each  $P_{ji}$  indicator. As experts, we will attract highly qualified specialists in the field of poultry farming. The main criteria for selecting experts are their competence and authority, so the number and visibility of the group of respondents in this case is assessed not so much as quantitative, but qualitative indicators. The experts faced the task of assessing the impact of the studied indicators on the efficiency of the enterprise. As a result of the independent survey, a matrix of paired comparisons of the efficiency of poultry enterprises was obtained, the elements of which are the arithmetic mean of the points (Appendix B), presented by experts (Table 2.18).

Table 2.18

**Matrix and results of paired comparisons of the efficiency of poultry farming enterprises of the Dnipropetrovsk region**

Criteria	$P1^i$	$P2^i$	$P3^i$	$P4^i$	Priority vector ( $W_i$ )	Index of relative importance ( $IRI$ )	Proportion
$P1^i$	1	5/3	4/3	2	0,3434	1,4277	4,1575
$P2^i$	3/5	1	2	8/3	0,3164	1,3062	4,1283
$P3^i$	3/4	1/2	1	1	0,1851	0,7560	4,0842
$P4^i$	1/2	3/8	1	1	0,1551	0,6306	4,0657
Eigenvalue of a matrix $\lambda_{max}$	4,1089						
Consistency index ( $CI$ )	0,0363						
Consistency index averaged ( $CIA$ )	0,9						
Relative consistency ( $RC$ )	0,0403 (4%)						

Source: calculated by the author

After forming the matrix of even comparisons, we define the eigenvector of the priorities of the matrix, check the consistency of the matrix using its eigenvalue, since the eigenvector of priorities ensures the ordering of priorities, and the eigenvalue is a measure of the consistency of estimates. Normalizing the main eigenvector of the matrix gives a priority vector.

Let's find the components of the eigenvector of local priorities of the matrix using the formula [139]:

$$\bar{U}_i = \sqrt[n]{\prod_{j=1}^n a_{ij}}, \quad i = 1, \dots, n \quad (2.5)$$

where  $a_{ij}$  – the element of the  $i$  row of the  $j$  column of the matrix of even comparisons.

The corresponding calculations for our task are as follows:

$$\bar{U}_1 = \sqrt[4]{1 \cdot \frac{5}{3} \cdot \frac{4}{3} \cdot 2} = \sqrt[4]{4,442} = 1,4518; \quad \bar{U}_2 = \sqrt[4]{\frac{3}{5} \cdot 1 \cdot 2 \cdot \frac{8}{3}} = \sqrt[4]{3,204} = 1,3379;$$

$$\bar{U}_3 = \sqrt[4]{\frac{3}{4} \cdot \frac{1}{2} \cdot 1 \cdot 1} = \sqrt[4]{0,375} = 0,7825; \quad \bar{U}_4 = \sqrt[4]{\frac{1}{2} \cdot \frac{3}{8} \cdot 1 \cdot 4} = \sqrt[4]{0,185} = 0,6558.$$

$$\sum_{i=1}^n \bar{U}_i = 1,4518 + 1,3379 + 0,7825 + 0,6558 = 4,228$$

The priority vector was obtained by normalizing the eigenvector of the matrix according to the formula:

$$W_i = \frac{\bar{U}_i}{\sum_{i=1}^n \bar{U}_i}; \quad i = 1, \dots, n. \quad (2.6)$$

where  $\bar{U}_i$  – vector of local priorities.

$$W_1 = \frac{1,4518}{4,228} = 0,3434; \quad W_2 = \frac{1,3379}{4,228} = 0,3164; \quad W_3 = \frac{0,7825}{4,228} = 0,1851;$$

$$W_4 = \frac{0,6558}{4,228} = 0,1551.$$

Validation: The sum of the normalized components of the vector is 1.

Let's estimate the value of the eigenvalue to which the calculated priority vector corresponds. For this we will find the product  $A \cdot W$ .

$$A \cdot W = \begin{pmatrix} 1 & 5/3 & 4/3 & 2 \\ 3/5 & 1 & 2 & 8/3 \\ 3/4 & 1/2 & 1 & 1 \\ 1/2 & 3/8 & 1 & 1 \end{pmatrix} \cdot \begin{pmatrix} 0,3434 \\ 0,3164 \\ 0,1851 \\ 0,1551 \end{pmatrix} = \begin{pmatrix} 1,4277 \\ 1,3062 \\ 0,7560 \\ 0,6306 \end{pmatrix}$$

Now to estimate the value  $\lambda_{max}$ , let's divide the component components of the product  $A \cdot W$  on the components of the priority vector  $W_i$ . B as a result, we will get a vector:

$$\begin{pmatrix} 4,1575 \\ 4,1283 \\ 4,0842 \\ 4,0657 \end{pmatrix}$$

After that for an approximate value  $\lambda_{max}$  let's choose the arithmetic mean of the components of the obtained vector:

$$\lambda_{max} = \frac{4.1575 + 4.1283 + 4.0842 + 4.0657}{4} = 4.1089$$

It is known that the consistency of a square inversely symmetric matrix is equivalent to the requirement of equality of its maximum eigenvalue  $\lambda_{max}$  of  $n$ . Next, we calculate the consistency index according to the formula:

$$CI = \frac{\lambda_{max} - n}{n - 1} = \frac{4,1089 - 4}{4 - 1} = 0,0363$$

We compare the obtained consistency index with a randomly selected average consistency index value ( $CIA$ ) matrices of the same size. For this, we will use the scale of relative importance T. Saati (Appendix B). The ratio of the consistency index to the averaged value ( $CIA$ ) for a matrix of the same order, it is it is called relative consistency ( $RC$ ). For  $n=4$   $CIA=0,9$ .

$$RC = \frac{CI}{CIA} = \frac{0,0363}{0,9} = 0,0403 \text{ (4\%)}$$

The hierarchy analysis method allows a certain level of inconsistency. Relative inconsistency should not be greater than 10% (in some cases, when there is no need for high accuracy, no more than 20% is allowed). If  $RC$  goes beyond these limits, then experts need to test their judgments. In our case,  $RC$  does not go beyond inconsistency. Further, the vectors of priorities of the influence of factors on the production process according to other indicators (productivity, herd preservation, feed consumption,% case) and the assessment of consistency are determined by a similar method (Appendix C).

Summarize the obtained calculations of vectors of priorities of influence of factors and determine the vector of global priorities (Table 2.19).

Table 2.19

**Results of calculations of generalized priority assessments**

Criteria	P1 <sup>i</sup>	P2 <sup>i</sup>	P3 <sup>i</sup>	P4 <sup>i</sup>	Vector of global priorities
P1 <sup>i</sup>	0,6895	0,3540	0,5117	0,3078	0,4912
P2 <sup>i</sup>	0,1855	0,2389	0,2518	0,2707	0,2279
P3 <sup>i</sup>	0,0829	0,2168	0,1657	0,2350	0,1642
P4 <sup>i</sup>	0,0421	0,1903	0,0708	0,1865	0,1167

Source: calculated by the author

The weighted average estimates calculated in the last column of the table are the ratio of the scores for each indicator to the total and equal to one. Multiplying the values obtained by expert opinions by the previously found indicators  $P_{ji}$  will obtain more correct, from the point of view of the specifics of the production process, performance indicators of poultry enterprises for each factor  $P_{ji}^*$ , summing up the final assessment of the work of poultry enterprises. The results of the study (Table 2.20) make it possible to analyze the efficiency of poultry enterprises and identify factors that have a significant impact on the efficiency of the production process.

Table 2.20

**Performance indicators of poultry enterprises based on expert analysis**

Company name	P1 <sup>i*</sup>	P2 <sup>i*</sup>	P3 <sup>i*</sup>	P4 <sup>i*</sup>	$\sum j^*$
PPF “Agrocenter”	0,422	0,088	0,147	0,071	0,728
“AVIAS-2000” LLC ролл	0,428	0,066	0,164	0,075	0,733
LLC “Marganetska Poultry Factory”	0,448	0,197	0,159	0,117	0,921
“Agrofirma Dnipropetrovsk” LLC	0,479	0,017	0,152	0,058	0,706
LLC “Lozuvat Poultry Factory”	0,491	0,228	0,129	0,043	0,891

Source: calculated by the author

The analysis of indicators of the activity of poultry enterprises shows that the productivity of poultry ( $P1i^*$ ) has a significant impact on the efficiency of all studied poultry enterprises and ranges from 42.2% (PPF “Agrocenter”) to 49.1% (LLC “Lozuvatska Poultry Factory”). A less influential indicator on the efficiency of enterprises is the herd preservation indicator ( $P2i^*$ ) in “Agrofirma Dnipropetrovsk” LLC (1.7%), the most – in “Lozuvatska Poultry Factory” LLC (22.8%). Indicators of feed consumption ( $P3i^*$ ) and poultry decline ( $P4i^*$ ) also have a significant impact on the efficiency of the studied enterprises, although their weight is much lower. In particular, the most influential indicator was the poultry drop in “Marganetska Poultry Factory” LLC (11.7%) and the indicator of feed consumption in “AVIAS-2000” LLC (16.4%). The increase in the percentage of poultry fall occurred as a result of an insufficient level of zoo-veterinary control at the enterprise, and the increase in the rate of feed costs – in connection with the use of inferior feeding rations in order to reduce the cost of production. Based on this, it can be argued that the indicator of poultry productivity is the most important indicator when evaluating the work of poultry enterprises, which affects almost all other indicators: with an increase in productivity, feed costs, labor costs, and cost are reduced, and with a decrease in productivity, these indicators increase.

As a result of the study, “Marganetska Poultry Factory” LLC (92.1%) turned out to be the most effective activity. This is the highest performance of all the enterprises studied. In view of this, we will conduct a more detailed analysis of the organizational activities of this enterprise, since it is this activity of the enterprise that is a necessary process that ensures the functioning in accordance with its goals and objectives.

The main element of the enterprise management system is the organizational management structure, the quality of construction and efficiency of which is the main factor in ensuring the efficiency of enterprise management as a whole. A prerequisite for ensuring the appropriate rate of development of poultry enterprises is to assess the effectiveness of the enterprise management system in general and its organizational structure in particular. The means of this process is diagnostics.

For organizational diagnostics, it is necessary to determine the main directions of the organization management system, which will be analyzed. The analysis should be carried out in the following areas: production and financial activities, resource support system, logistics activities, innovation activities, level and management methods, employee qualifications, marketing activities.

The analysis of management methods includes the analysis of preventive measures carried out at the enterprise, their impact on the state of affairs, evaluation of the efficiency and effectiveness of agreements. It also provides for the study of the following issues: the activities of the top management of the enterprise, the goals and objectives set by them in the development of strategy and tactics, the main criteria for decision-making, the degree of consistency of the tasks set between individual divisions of the enterprise, the level of competence of managers, the degree of their provision of the necessary information. The assessment of financial activity includes an analysis of the financial condition, market stability, balance sheet liquidity and solvency of the enterprise, the purpose of which is to obtain key parameters that provide an objective and accurate assessment of the financial condition of the enterprise, its profits and losses, changes in the structure of assets and liabilities. The analysis of the resource supply system involves the study of: the company's fodder stocks, their storage terms, and the analysis of their price level.

Research in the field of employees' qualifications should be aimed at assessing their qualifications, general assessment of the principles of personnel policy, the conditions of its development in accordance with the needs of the organization; in the field of marketing policy, an assessment of market capacity, the degree of forecasting of market development and the implementation of a certain assortment and price policy of the enterprise in connection with these studies are carried out. The evaluation of innovative activity allows us to assess the degree of introduction into production of technically new production capacities and used technologies.

Let's determine the space of states in which diagnostics will be carried out in the main directions that characterize the state of the enterprise:  $S^+$  - state of

recovery and development;  $S^-$  - state of decline and crisis. Each state of  $S^+$  and  $S^-$  can be characterized by its degree of depth (Table 2.21).

Table 2.21

**System of states of the enterprise**

$S^+$	$S^-$
$S^+_1$ end of the transition period	$S^-_1$ downgrading; the hidden stage of the crisis
$S^+_2$ optimization and significant innovations	$S^-_2$ the first symptoms of the crisis
$S^+_3$ significant expansion	$S^-_3$ unstable position
$S^+_4$ achieving a high degree of development	$S^-_4$ a clear state of crisis

*Source: own research*

Through the introduced system of states, it is possible to determine the real state of the enterprise in various spheres of its activity. Organizational diagnostics is carried out with the help of a list of questions that were proposed to the company's employees in order to assess the current state of the company. The following company employees were involved in this work as experts:

- A – Deputy General Director;
- B – Chief Economist;
- V – Chief Veterinarian;
- G – Deputy Director for Production;
- D – Head of the Marketing Department;
- E – Head of the Financial Department.

Each expert provided an independent assessment of the enterprise's performance in accordance with the diagnostic criteria set out in tables 2.15–2.20. Based on their responses, a consolidated characterization of the enterprise's condition in major areas of activity was formed (Table 2.22).

To obtain quantitative results and ensure comparability of expert opinions, a nine-point evaluation scale was applied. The scale ranges from 1 to 9 points,

reflecting the full spectrum of possible enterprise states – from the lowest level  $S^{-4}$  (1 point), indicating a critically unsatisfactory condition, to the highest level  $S^{+4}$  (9 points), which reflects a highly favorable, stable, and efficient state of development.

Such an approach enables not only the fixation of the current state of individual subsystems, but also the identification of problematic zones and priorities for managerial intervention, thus forming a basis for developing targeted measures aimed at improving the efficiency and sustainability of enterprise operations.

Table 2.22

### Quantitative assessments of experts

Experts	Production and financial activity	The system of providing the enterprise with the necessary resources	logistic activity	Innovation activity	Level and management methods	Qualification of employees	Marketing activity
A	3	7	4	6	7	6	6
B	3	6	3	6	5	6	6
V	4	6	3	6	6	7	5
G	3	6	4	5	5	7	5
D	4	7	3	5	6	7	6
E	3	6	3	6	5	7	6
$\bar{r}_j$	3,3	6,3	3,3	5,7	5,7	6,7	5,7
$R_j$	3	6	3	6	5	7	6

Source: own research

To assess the degree of consistency of experts' opinions, we will use the concordance coefficient, that is, the general rank correlation coefficient for the entire group, which consists of 6 experts and is calculated according to the formula:

$$W = \frac{S}{S_{max}}, \quad (2.7)$$

where  $W$  – coefficient of concordance;  $S$  – total quadratic deviation of the total ranks of alternatives from  $R_{cp}$  (the average value of the total ranks of alternatives);

$$S = \sum_{i=1}^n \left[ \sum_{j=1}^m r_{ij} - \frac{m \cdot (n + 1)}{2} \right]^2 = \sum_{i=1}^n \left[ S_i - \frac{m \cdot (n + 1)}{2} \right]^2 \quad (2.8)$$

$S_{max}$  – total quadratic deviation of the total ranks of alternatives from  $R_{cp}$  (the average value of the total ranks of alternatives) with the best consistency.

$$R_{cp} = \frac{m \cdot (n + 1)}{2} \quad (2.9)$$

where  $R_{cp}$  – average value of total ranks;  $n$  – number of experts;  $m$  – number of indicators to be evaluated.

In the case where all experts give the same estimates,  $S$  will have a maximum value. Then  $S_{max}$  is calculated by the formula:

$$S_{max} = \frac{m^2 \cdot (n^3 - n)}{6} \quad (2.10)$$

The concordance coefficient varies between 0 and 1. If it is equal to 1, then the opinions of experts are the same. If it is equal to 0, then there is no agreement between the experts, this indicates that the issue has not been sufficiently studied and that a single opinion and views have not developed on the importance of the production indicator to date. Pearson's criterion is used to test the hypothesis about the significance of the concordance coefficient ( $X^2$ ) with the number of degrees of freedom  $k=n-1$ . The investigated value of the Pearson criterion is calculated according to the formula:

$$X_k^2 = W \cdot m \cdot (n - 1) \quad (2.11)$$

If the value of the criterion is greater than the critical one from the table of critical values of the Pearson distribution for a given level of significance and the number of degrees of freedom, then the concordance coefficient is statistically significantly different from zero and the opinion of experts is considered consistent.

The average value of the total ranks in our case  $R_{cp} = 24$

$$S = 763.5 \quad W = 0.37 \quad X_k^2 = 13.32 \quad (2.12)$$

By table of critical distribution points  $\chi$  Pearson, we define:

$$X_{kp}^2 = (a = 0.05; k = 6) = 12.59 \quad (2.13)$$

The calculated value of the concordance coefficient is greater than the critical level, so the hypothesis of no significance of the concordance coefficient at a significance level of 0.05 is rejected. Since the concordance coefficient is greater than 0.3 and its statistical significance is proven, the opinion of the experts is agreed, the estimates obtained are reliable. The final results of the organizational diagnosis will be included in the table 2.23.

*Table 2.23*

### **Results of organizational diagnostics**

The direction of diagnosis	S <sup>+</sup>	S <sup>-</sup>
Production and financial activity	-	S <sub>1</sub> <sup>-</sup>
The system of providing the enterprise with the necessary resources	S <sub>1</sub> <sup>+</sup>	-
Logistic activity	-	S <sub>2</sub> <sup>-</sup>
Innovation activity	S <sub>1</sub> <sup>+</sup>	-
Level and management methods	S <sub>1</sub> <sup>+</sup>	-
Qualification of employees	S <sub>2</sub> <sup>+</sup>	-
Marketing activity	S <sub>1</sub> <sup>+</sup>	-

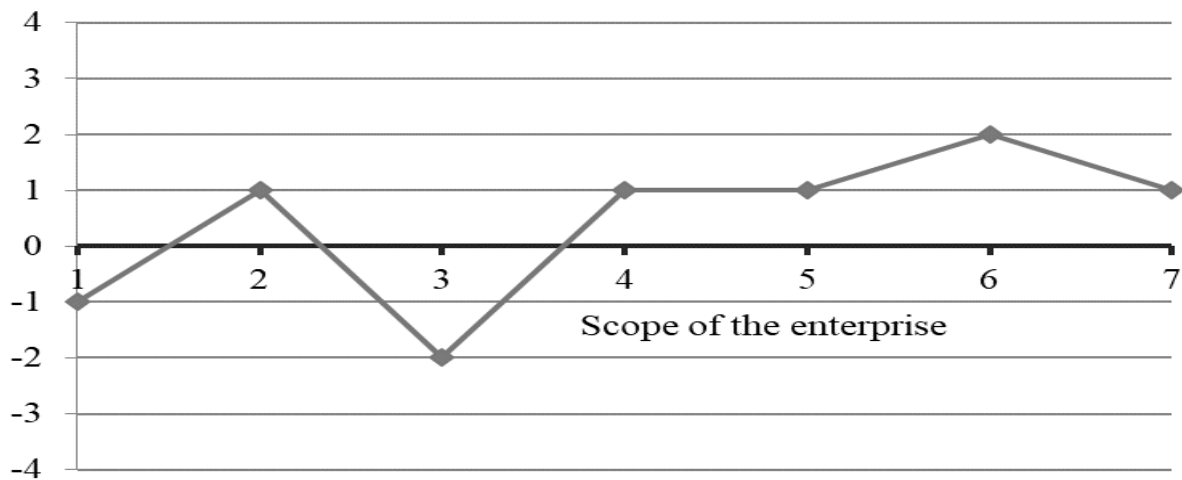
*Source: own research*

Based on the results of the diagnosis, we will graphically depict the state of the enterprise (Fig. 2.5). Point 1 (production and financial activity) and point

3 (logistics activity) are problematic areas of the type of activity for the enterprise under study.

In general, our analysis of the main performance indicators of poultry farming enterprises of the Dnipropetrovsk region showed that enterprises with smaller production volumes are in a more vulnerable state. At the same time, the larger the volumes of production, the more perfect the mechanism of managing production processes at the enterprise.

Poultry enterprises of the Dnipropetrovsk region are in a situation where traditional management models no longer provide the necessary level of efficiency and competitiveness. In modern conditions of market turbulence, increased competition and growing consumer demands, they urgently need innovative renewal of both the production and technological base and the organizational and management system.



**Fig. 2.5. Graphical presentation of the results of the organizational diagnostics of the enterprise**

*Source: own research*

First of all, modernization should be aimed at those areas of activity that directly shape the competitiveness of products: improving their quality, improving safety and environmental indicators, optimizing the technological processes of growing, processing and storing poultry products. Improvement of

these components will allow not only to increase the market attractiveness of products, but also to significantly expand their sales channels.

An important component of innovative development is the optimization of the consumable part of production. The introduction of energy-saving technologies, automated control systems for poultry fattening and keeping processes, modernization of equipment and renewal of engineering infrastructure contribute to a significant reduction in the cost of production. Reducing costs, in turn, ensures an increase in profitability and creates financial prerequisites for further investment development.

Thus, systematic innovative renewal – from technological processes to management mechanisms – opens up the opportunity for poultry enterprises not only to stabilize their activities, but also to ensure sustainable expanded reproduction, deepening of specialization, modernization of production and improvement of economic efficiency in the conditions of a competitive market environment.

**SECTION 3.**  
**DIRECTIONS OF ECONOMIC INCREASE EFFICIENCY**  
**OF POULTRY ENTERPRISES**

**3.1. Development of the optimal production program of poultry enterprises from the point of view of marketing**

In the conditions of transformational transformations in the domestic economy and increased competition from foreign manufacturers, domestic enterprises are in a very difficult position. This issue is very important, as the effective functioning of the enterprise means strengthening the socio-economic situation of the country. The experience of many successful enterprises of developed industrial countries shows that in conditions of fierce competition, the planning of production and economic activities of enterprises is the most important condition for their survival and economic growth. Modern business conditions require scientifically based approaches to the formation of a plan for the production and sale of products by applying new effective approaches in management using economic-mathematical modeling of production and technological processes. The most effective means of planning, which allows you to organize production with the maximum profit from the sale of products and at the same time satisfy consumer demand, is the formation of a production program that will make it possible to increase the competitiveness of products, effectively use the resources available at the enterprise and expand the limits of product sales.

The concept of a production program occupies an important place in the categorical apparatus of economic science, and orientation to market factors becomes a necessary prerequisite for the process of its development. This was facilitated by the historical transition from the “producer market” to the “consumer market” and changes in strategic priorities and the philosophy of

entrepreneurship, when instead of the principle: “produce what we can and know how and look for a buyer”, the principle: “produce what is sold” is applied. After all today, only such a strategic orientation of the enterprise is the key to its stable development and growth [19].

The problem of forming a production program is the subject of research by many domestic and foreign scientists. Yes, scientists A. Hukalyuk and O. Senyshyn propose a methodical approach to optimizing the production program, which is based on the use of trend analysis and economic-mathematical modeling [34]. The well-known domestic scientist G. also touches on the problems of optimizing the production program. Tarasyuk. In particular, she proposed a model for managing the production program of the enterprise, which is based on the optimization of net income from the sale of products taking into account the planned level of profit [161]. An economic-mathematical model for determining the optimal volume of production based on taking into account the technical and economic indicators of the enterprise and the influence of external and internal factors is proposed by V. Coachman [71]. Scientists M. Lepa and O. Solodov stress the crucial role of marketing research in the production planning process [74]. In particular, they have developed a number of economic-mathematical models that allow calculating the optimal volume of production based on taking into account the level of market demand and supply of products by competitors [88]. The problem of resource substantiation of the production program of enterprises is investigated by scientists N. Mitsenko [89] and I. Chayun [183] and other scholars. The works of V. Mikhanko [88]. Researcher N. Romanyuk improved the mechanism of planning the production program of the enterprise, which is based on the dependence of the probability of product sale on its volume and sources of financing [137]. Aspects of production planning under conditions of fuzzy input information are investigated by scientist V.M. Tsitsak, which developed a set of models for the formation of an optimal production program based on the theory of fuzzy sets [181, 182].

In the scientific literature, there are different approaches to determining the main stages of the process of forming the production program of the enterprise. In particular, Yu. Yehupov believes that the main stages of the formation of the enterprise's production program are: marketing research; justification of the composition and determination of the level of target indicators; development of planned balances of production resources; economic evaluation of the production program; adjustment of tactical plan parameters based on the results of the economic evaluation of the production program; construction (development) of an economic-mathematical model of optimization of the production program and implementation of appropriate optimization calculations; analysis of the results of optimization calculations [46]. Along with this, E. Ponomarenko is of the opinion that the key components of the process of forming the production program of the enterprise should be: resource provision of the production program; optimization (improvement) of the production plan for the purpose of effective use of resources and potential; system of marketing justification of the production plan [124].

The main task of the enterprise's production program, from the point of view of marketing, is to maximally satisfy the needs of consumers for high-quality products, provided that the available resources are optimally used and maximum profit is obtained. In order to solve this task, in the process of developing a production program at all technological levels, the following requirements must be observed: determination of consumer demand and justification of the volume of production; calculation and analytical justification of the production plan for the available resource base; calculation of optimal indicators of the enterprise's production activity; determination of cost and natural indicators of the volume of production and directions of product sales [110].

The production program of the enterprise consists of two sections: the production plan in natural (conditional natural) terms and the production plan in value terms. Planning of the production program in natural terms involves

determining the nomenclature and assortment of products; calculation of product needs, production volume by calendar periods of the year and justification of planned production volumes. Natural indicators of the production program are the volume of products in natural units by nomenclature and assortment. In the process of forming a product manufacturing plan, the use of natural meters is extremely important, as it allows you to compare the planned volume of production with the available level of demand, makes it possible to determine the market share of one or another type of product, calculate the norms of consumption of material and labor resources, standards of working time, calculate the level consumption and efficiency of use in the production process of material, labor and financial resources. At enterprises that manufacture products of a wide profile, the use of natural indicators does not allow to calculate the total volume of manufactured products and analyze the dynamics of generalizing indicators, therefore, it is advisable to analyze the production program in natural terms at highly specialized enterprises that manufacture homogeneous products. In current planning, the production program is usually drawn up for a year. In the face of the dynamism of the internal and external environment, it is not appropriate to develop a production programme for a longer period [20, 33].

The production program should be formed taking into account the company's resources and obtaining the best results, that is, be optimal. The main factors that must be taken into account when forming the production program of agricultural enterprises include: the amount of supply and demand for products; production capacity of the enterprise; nomenclature and assortment of products; labor intensity of production; costs for its production; market prices [43].

We believe that the process of forming the production program of the enterprise should be based on the application of the method of economic and mathematical modeling of optimization of the production structure. With the help of this method, it is possible to solve a number of different economic and mathematical problems both at the level of the agricultural enterprise and its

divisions (optimization of the main indicators of the plan of the organizational and economic system, the production program of the economy, the intra-economic placement of production) at the regional level (optimal specialization and placement of production by territory in district, region, country). Economic and mathematical modeling also allows solving a number of other issues that detail agricultural production and optimization of technical re-equipment of enterprises, feed costs, etc. The model of optimization of the production structure includes both some component parts and simpler models or their individual components – optimization of feed rations and herd structure.

Therefore, the optimization of the production plan is one of the most important areas of mobilization of the company's internal reserves. It is carried out in order to plan the optimal structure of the product nomenclature; determination of the maximum possible volume of production and the economic limit of increasing production. It must correspond to the structure of the company's resources and ensure the best results of its activities according to an acceptable criterion. Usually, the criterion of optimality is profit, or the value of production. Limitations are production capacity, material or labor resources. It is calculated using the economic-mathematical method of linear programming.

Today, linear and broader mathematical programming is one of the main methods of making production and economic decisions. The use of linear programming methods in the planning of agricultural production has significant advantages: during linear programming, all realistically possible options for the plan are taken into account and the best – optimal one is selected from them; linear programming tasks are easily automated on a computer, which makes it possible to take into account a large number of factors and auxiliary production conditions, increases the quality of the developed plans. To solve the problem by the programming method, it is necessary that the situation described in it meets five main conditions: 1. It was associated with limited resources (that is, a limited number of workers, equipment, finances, materials), otherwise this task simply would not exist. 2. Had a clearly formulated goal (maximizing profit or

minimizing costs). 3. It was described by linear formulas. 4. It was homogeneous. 5. Small divisibility, because the linear programming method is based on the assumption that results and resources can be divided into destinies. If such division is not possible, it is better for the analyst to take advantage of a special modification of linear programming – discrete programming [18].

It is important to emphasize that in the practice of operational management, simplex and transport methods belong to the typical application of linear programming methods. Simplex Method (Simplex Method) is an algebraic procedure, as a result of which the analyst consistently approaches the optimal solution. Theoretically, this method can solve problems that include any number of variables and constraints, but if they have more than four variables or constraints, then the calculation is performed on computer technology. The Transportation Method is a simplified specific variant of the simplex method. It should be noted that it received this name, because it is widely used to solve problems related to the transportation of products from different sources to several destinations. A typical application of linear programming techniques is reflected in the works of A. Derya, Jacobs, M. Murât, Silan and Barry A. Clemson [199].

For poultry organizations, it is important to form an optimal production plan for maximum profit, taking into account production and market restrictions. On the one hand, there are certain advantages for different methods of processing poultry meat depending on the weight of its carcass. For example, a bird with the lowest weight, which has a small yield of meat, is more rational to send for deep processing; a bird with an average weight is in demand when selling carcasses whole, and it is more appropriate to process the largest bird into parts. In addition, different production costs are associated with different types of poultry carcass processing. On the other hand, one of the essential factors of the production process is the real demand for different types of poultry products (minced meat, whole carcass, processed carcass), which differ in terms of sales time periods (weekdays or weekends and holidays). In order to form an

optimal production plan, it is important to make management decisions in a timely manner, depending on which period and which weight group of poultry should be sent to one or another type of processing [71, 83]. To solve this production task, we propose to use mathematical modeling methods in the context of basic concepts of operations research and methods of optimization of management decisions [Wagner and Wentzel]. Our proposed method of planning poultry meat production based on the linear programming method includes eight stages:

- grouping of poultry heads by weight categories;
- calculation of output in slaughter weight;
- determination of the quantity of finished products by species depending on the option of poultry meat processing;
- determination of the cost of processing poultry meat;
- determination of the price of the manufactured products;
- calculation of profit from the sale of all products;
- determination of coefficients depending on the demand for different types of products;
- drawing up an optimal poultry meat processing plan.

A study of the work of enterprises of the Dnipropetrovsk region that produce poultry meat shows that, provided the production increases, it is not always economically justified, as it may remain unclaimed by potential buyers. Therefore, in order to effectively sell poultry meat and its processing products, it is necessary to adhere to the modern concept of marketing, the essence of which is to assess consumer demand and its change for the future. Thus, the volume of poultry meat production should be functionally dependent on the preferences of consumers.

Analysis of the demand for poultry meat in the Dnipropetrovsk region according to the survey data (Appendix A) of the population of the region proved that consumers have a positive attitude towards this type of product. According to the survey data, the total number of meat consumers in the studied

region is about 95% of the surveyed population, of which: 38% - buy meat every week (active consumers); 33% - buy meat 2-3 times a month (average consumers); 26% - buy meat once a month, or even less often (passive consumers) and 3% - do not buy meat at all. When buying meat, consumers prefer poultry meat (52%), in second place – pork (33%), in third place – beef (11%), in the last place – rabbit meat (3%) and lamb (1%). This situation is explained by the fact that this type of meat is affordable, easy to prepare, low-fat and contains a lot of protein and nutrients that our body needs. It is also important to emphasize that when buying this type of meat, for 71% of respondents, an important selection criterion is the date of production and the deadline for consumption, for 63% - taste qualities, for 60.6% - an acceptable price, 57% - prefer the popularity of the brand. Based on these data, it can be said that consumers prefer to buy and consume fresh and high-quality products of proven manufacturers.

The structure of consumer preferences by types of products made from poultry as a result of its slaughter and processing shows that consumers prefer when buying: whole carcass (20%), thigh (18%), leg (15%), minced chicken (13%), wing (11%), soup products (10%), fillet (8%), quarter back (5%) It should be noted that poultry enterprises produce a fairly wide range of poultry products both frozen and chilled. The majority of respondents prefer chilled meat (72%), because in this form the meat preserves trace elements and nutrients better, and it does not lose its taste. As for the producer himself, the leaders in the poultry meat market according to the results of the survey are TM “Nasha Ryaba” (58%) and TM “Gavriliivski chicks” (37%). So, as the survey data show, a large number of respondents prefer the products of manufacturers of the Dnipropetrovsk region.

In order to increase the efficiency of the production and sale of poultry meat and in order to improve the provision of this type of products to the population of the region, we have developed an economic-mathematical model for optimizing the plan for the production, processing and sale of poultry meat

based on consumer demand. The data of the analysis of poultry meat production in the Dnipropetrovsk region in terms of enterprises show that 53.5% of the domestic market of poultry meat production in the region belongs to PJSC “Oril-Leader” [86], which allows us to choose this enterprise as an object of modeling the optimization plan of production, processing and sale of the researched products.

One of the most important problems solved in PJSC “Oril-Leader” there is an optimization of the plan for the production, processing and sale of poultry products, taking into account production and market conditions. Therefore, the formulation of the mathematical problem can be formulated as follows: based on the availability of production resources and turnover in branded stores, it is necessary to determine the structure of production and sale of poultry meat and its processing products, which will ensure the maximum economic effect.

PJSC “Oril-Leader” is engaged in the cultivation, processing and sale of poultry meat – broilers. The enterprise produces carcasses of different weight categories, which are used for the production of different types of products [39]. All broiler carcasses grown at the enterprise are used for four options for the production and processing of broiler meat: whole carcass, processed carcass, soup products and minced meat [41, 42]. Carcasses of the first and second weight categories can be divided into all four options for processing poultry meat. It is completely advisable to direct the non-standard to the production of soup products and minced meat.

To build an economic-mathematical model, it is necessary to introduce the notation of variables and justify the criterion of optimality. As a criterion for the optimality of the production plan, we will take the maximum profit, because it best characterizes the efficiency of the production and sales activity of the enterprise.

Let us take  $x_{iq}$  – quantity of primary raw materials of a  $q$  weight category in the  $i$  production option, i.e., moreover  $x_{iq} \geq 0$ ,  $i=1, \dots, 4$ ,  $q=1, 2$  (for the first and

second weight categories),  $x_{13}=0$ ,  $x_{23}=0$ ,  $x_{33}\geq 0$ ,  $x_{43}\geq 0$  (for the non-standard category).

Let us take  $R_q$  – stock of primary raw materials of a  $q$  weight category,  $q=1, 2, 3$  – weight categories of the poultry. Then the restrictions on their costs describe inequalities:

$$\sum_{i=1}^4 x_{iq} \leq R_q, q=1, \dots, 3. \quad (3.1)$$

As a result of four options for processing broiler meat, namely whole carcass, processed carcass, soup products and minced meat, in PJSC “Oril-Leader” the following types of products are obtained: (1) carcass; (2) thigh; (3) drumstick; (4) goulash; (5) round cut; (6) wing; (7) fillet; (8) bone residue; (9) gizzard; (10) liver; (11) heart; (12) neck; (13) minced meat; (14) heads; (15) paws.

Let us take  $Y_k$  – total number of the  $k$  type of products, where  $k$  – types of products ( $k=1, \dots, 15$ ).

According to annual reports in 2023, PJSC “Oril-Leader” produced 64,149 tons of finished products. Thus, in one shift, the enterprise can produce an average of 175 tons of ready-to-sell products. The specific weight of the output from 100 kg of raw materials for each of the four options for processing the broiler carcass is given in the table 3.1.

Let’s take the volume of raw materials processed by the  $i$  option as:

$$X_i = \sum_{q=1}^3 x_{iq}, i=1, \dots, 4. \quad (3.2)$$

Technological requirement for the total volume of production  $S$  specified as:

$$\sum_{i=1}^4 e_i X_i \leq S, \quad (3.3)$$

where  $e_i$  – the rate of total consumption of primary raw materials in the  $i$  processing option.

Table 3.1

**Types of products according to broiler carcass processing options  
in PJSC “Oril-Leader”**

Product	<i>Options for processing chicken carcasses</i>				Sold per year, tones
	1 option	2 option	3 option	4 option	
	Output from 100 kg of raw materials, kg				
Carcass	86,30	-	-	-	16935
Thigh	-	21,50	-	-	4233
Drumstick	-	11,62	-	-	2309
Goulash	-	-	57,30	-	11226
Round cut	-	19,50	-	-	3849
Wing	-	11,50	-	-	2245
Fillet	-	21,60	-	-	4234
Bone residue	-	-	14,30	-	2823
Gizzard	-	-	1,70	-	320
Liver	-	-	1,30	-	257
Heart	-	-	1,30	-	257
Neck	-	-	2,30	-	450
Minced meat	-	-	-	69,40	13664
Heads	-	-	2,5	-	513
Paws	-	-	4,4	-	834
Total	86,30	85,72	85,10	69,40	64149

*Source: calculated from the company's production reports*

Processing of poultry meat requires taking into account restrictions on the availability of labor resources ( $b_1$ ) and equipment ( $b_2$ ). If  $a_{ij}$  – the cost rate of the  $j$  resource with the  $i$  processing option, then we get the ratio:

$$\sum_{i=1}^4 a_{ij} X_i \leq b_j, j=1,2. \quad (3.4)$$

The calculation of resource consumption rates per unit of production according to the  $i$  option of poultry meat processing is given in the table 3.2. It should be emphasized that the enterprise has limited resources. Based on this, the workforce is limited to 320 people, the equipment is 80 units.

Table 3.2

**Imprint for optimising the production plan for poultry products  
in PJSC “Oril-Leader”**

Volume of raw materials processed <i>i</i> option, kg ( $X_i$ )	Resources per unit of production	
	Labor resources, persons ( $a_{i1}$ )	Equipment, unit. ( $a_{i2}$ )
$X_1$	0,00157	0,000392
$X_2$	0,00156	0,000390
$X_3$	0,00155	0,000387
$X_4$	0,00126	0,000316
Amount of resources ( $b_j$ )	320	80
Cost of a unit of resource, UAH. ( $d_j$ )	375,00	850,00

*Source: calculated by the author based on the company's production reports*

If we mark through uki the yield coefficient of the  $k$  type of products with the  $i$  processing option, then the number of products of the  $k$  type of the  $i$  category will be:

$$Y_{kq} = \sum_{i=1}^4 u_{ki} x_{iq}, \quad k=1, \dots, 15, \quad q=1, \dots, 3. \quad (3.5)$$

The total number of products of the  $k$  type will be:

$$Y_k = \sum_{q=1}^3 Y_{kq}, \quad k=1, \dots, 15, \quad (3.6)$$

and must be consistent with  $S_k$ 's known guaranteed demand for it and desire to expand the range of customers, i.e:

$$Y_k \geq S_k, \quad k=1, \dots, 15.$$

The profit of the activity will be defined as the difference between the revenue from the sale of the production of products (B) and the cost price (C).

Let us take  $p_k$  – basic price for the  $k$  type of products,  $k=1, \dots, 15$ , which corresponds to the data of the table 3.3. Price correction coefficient depending on the category  $q$  denote as  $w_q$ ,  $q=1, \dots, 3$ . Then:

$$B = \sum_{k=1}^{15} p_k \sum_{q=1}^3 w_q Y_{kq} \quad (3.7)$$

Table 3.3

**Basic selling prices for manufactured products**

Product	Basic price, UAH/kg
Carcass	29,25
Thigh	36,30
Drumstick	29,10
Goulash	42,56
Round cut	28,11
Wing	31,57
Fillet	50,74
Bone residue	13,82
Gizzard	22,14
Liver	31,02
Heart	34,90
Neck	13,50
Minced meat	49,00
Heads	9,90
Paws	8,27

*Source: calculated by the author based on the company's production reports*

For the non-standard category  $w_3=1,05$ , second weight category  $w_2=1,08$ , third weight category  $w_1=1,12$ .

The cost price, which depends on the costs, the cost of the used resources and primary raw materials, has the form:

$$C = \sum_{q=1}^3 c_q \sum_{i=1}^4 x_{iq} + \sum_{j=1}^2 d_j \sum_{i=1}^4 a_{ij} X_i, \quad (3.8)$$

where  $c_q$  – the cost of primary raw materials  $q$  category,  $q=1,\dots,3$ ,  $d_j$  – unit cost  $j$  resource,  $j=1,2$ .

Finally, the obtained model requires the search for unknowns  $x_{iq} \geq 0$ ,  $i=1,\dots,4$ ,  $q=1,2$ ,  $x_{13}=0$ ,  $x_{23}=0$ ,  $x_{33} \geq 0$ ,  $x_{43} \geq 0$ , which satisfy the restrictions:

$$\left\{ \begin{array}{l} \sum_{i=1}^4 x_{iq} \leq R_q, \quad q = 1, \dots, 3 \\ X_i = \sum_{q=1}^3 x_{iq}, \quad i = 1, \dots, 4 \\ \sum_{i=1}^4 e_i X_i \leq S \\ \sum_{i=1}^4 a_{ij} X_i \leq b_j, \quad j = 1, 2 \\ Y_k = \sum_{q=1}^3 Y_{kq}, \quad k = 1, \dots, 15 \\ Y_k \geq S_k, \quad k = 1, \dots, 15 \end{array} \right. \quad (3.9)$$

and maximize the criterion:

$$f = \sum_{k=1}^{15} p_k \sum_{q=1}^3 w_q Y_{kq} - \left( \sum_{q=1}^3 c_q \sum_{i=1}^4 x_{iq} + \sum_{j=1}^2 d_j \sum_{i=1}^4 a_{ij} X_i \right) \rightarrow \max \quad (3.10)$$

In the process of optimization calculations, the Excel add-on “Solution Search” was used to determine the most rational structure of production and sale of products. This tool makes it possible to search for optimal solutions for linear and nonlinear programming problems by sorting through acceptable combinations of variables, taking into account the established constraints and the objective function. In our case, the target function was the maximum profit of the enterprise from the sale of poultry meat, and the limitations were the available resources, production capabilities and limits of demand for products.

As a result of the modeling, the optimal structure of production and sales volumes was determined, which ensures the maximization of the financial result under the conditions of compliance with the established limits of the minimum and maximum level of demand (Table 3.4). The obtained results indicate that the enterprise has the opportunity to achieve the highest level of profitability, provided that the actual market parameters – the sales price, consumption

volumes and the amount of resource consumption – correspond to the values laid down in the developed optimization model.

*Table 3.4*

**Recommended volume of poultry meat production by types of products for PJSC “Oril-Leader” (for 1 shift)**

Product	Actual production volume, kg	Planned production volume, kg	
		minimum market demand	maximum market demand
Carcass	46397	11543	40846
Thigh	11597	6888	14071
Drumstick	6326	5464	12215
Goulash	30756	13685	9180
Round cut	10545	4515	10359
Wing	6150	3961	9741
Fillet	11600	11158	27991
Bone residue	7734	3482	3712
Gizzard	877	2059	2474
Liver	703	1980	2320
Heart	705	1900	2165
Neck	1234	2612	2010
Minced meat	37436	6515	14173
Heads	1405	1742	1856
Paws	2285	1584	1547
Total	175750	79088	154660

*Source: calculated by the author*

As a result of the application of the built optimization model, which takes into account the fluctuations of the minimum and maximum demand for finished products on different days, a rational plan for the production, processing and sale of poultry meat was formed. The obtained optimal distribution of production volumes is given in the table 3.5, which reflects the most effective option for the use of production resources and the structure of the assortment in accordance with market conditions.

According to the simulation results, under conditions of minimum demand, it is advisable to direct 21% of broiler carcasses of the second weight category to the production of a whole carcass, 31% to the processing process, and the remaining 48% to the production of soup products. This proportion is optimal from the standpoint of maximizing marginal profit while maintaining the necessary level of satisfaction of consumer needs.

Broiler carcasses of the first weight category are recommended to be used exclusively for processing, as this option provides the highest profitability compared to alternative areas of processing and makes it possible to realize the quality characteristics of this product category as efficiently as possible.

Regarding poultry of the third weight category, which according to its characteristics belongs to non-standard products, the expediency of its differentiated use has been established. In particular, 29% of the volume should be optimally directed to the production of soup products, and 71% - to the production of minced meat. This approach makes it possible to minimize losses in the cost of non-standard raw materials and ensure their most profitable use in conditions of limited demand.

Thus, the developed optimization distribution of weight categories of poultry makes it possible to rationalize the structure of production and processing processes, increase the efficiency of the enterprise's functioning and adapt production volumes to the market situation, which ultimately contributes to the growth of the industry's profitability.

*Table 3.5*

**The optimal poultry meat production plan at PJSC “Oril-Leader”**

Demand for finished products	Weight categories of poultry	Production of poultry meat according to processing options, kg				Profit, million UAH
		Whole carcass	Processed carcass	Soup products	Minced meat	
Minimum market demand	First	-	14947	-	-	1,5
	Second	11543	17039	26384	-	
	Non-standard	-	-	2660	6515	
	Together	11543	31986	29044	6515	
Maximum market demand	First	-	29231	-	-	2,9
	Second	40846	45146	21497	-	
	Non-standard	-	-	3767	14173	
	Together	40846	74377	25264	14173	

*Source: calculated by the author*

With an increase in demand for finished products, for example, on weekends and holidays, compared to weekdays, the production structure will

change, that is, there will be another redistribution of poultry of all categories to different types of its processing.

In the case of maximum demand for products (under conditions when all manufactured products will be sold), it is recommended to send only 38% of broilers of the second weight category to the production of a whole carcass, distribute the rest of the broilers of this weight category as follows: 42% to the processing of the carcass, 20% - to the production of soup products. Broilers of the first weight category should be completely sent for carcass processing. The non-standard should be distributed as follows: 21% should be directed to the production of soup products, the rest should be used for the production of minced meat.

Thus, the implementation of the proposed model for optimizing the poultry meat production plan will allow the management of the enterprise to quickly respond to changes in demand for commercial products and make scientifically based management decisions regarding the planning of production volumes of its various types in order to obtain maximum profit. The implementation of this economic-mathematical model in production will provide an opportunity to optimize production processes, rationally use resources, and obtain maximum profit, which is a priority task for enterprises in the poultry industry.

### **3.2. Improvement of the marketing product policy of poultry enterprises on the basis of expanding the product range**

Increasing the efficiency of egg poultry enterprises, provided that the consumer market is saturated with natural eggs, encourages industry leaders to apply a differentiation strategy. Product differentiation involves the selection of a poultry farm product in the imagination of consumers from competitors' products in order to limit price competition. The peculiarities of the markets of

agricultural raw materials and food significantly narrow the possibilities of the differentiation strategy, since service differentiation and product differentiation cannot be applied in the industry. The most appropriate strategy for this production is image differentiation through brand creation. Factors of product differentiation can be internal qualities (improvement of product properties), as well as external qualities – form of packaging, size, packaging, services that accompany its sale [7]. Differentiation of food products has two main consequences for the supplier: firstly, the expansion of the product range contributes to the strengthening of the market power of the enterprise, since there are always buyers who show commitment to the product of this particular brand or this enterprise, which allows to raise the price and obtain an economic profit; secondly, the expansion of consumer choice in the market, because buyers are offered greater product variety, which is able to better meet their preferences. Thus, the manufacturer, due to differentiation, seeks to create a situation of monopolistic competition in which, due to the special characteristics of the products, he has a market advantage.

The presence of a differentiated market for egg products would allow domestic poultry enterprises to significantly reduce economic risks and losses. One of the most significant risks of domestic poultry enterprises is the instability of demand for eggs: consumer demand increases between October and May, as a result of which the price increases and sales volumes decrease. In the summer, the price of eggs reaches minimum values, while the market value of the egg often does not even reimburse the production costs of poultry farms. The limited shelf life of the egg results in a substantial decrease in the selling price between June and September and an increase in production costs [113].

In modern conditions, an effective way to avoid losses from seasonal fluctuations in demand for eggs is their processing. The introduction of egg processing technologies allows poultry enterprises to increase economic efficiency due to the following factors: reduction of economic losses from seasonal fluctuations in demand; the possibility of using a substandard egg (non-

commercial egg, cracked egg, etc.), part of which can make up to 15% of the production volume; increase in the shelf life of products; geographical expansion of the company's product sales market [1, 172]. Currently, chicken egg processing in Ukraine is only about 4% of total production, while in Europe – 30%, in the USA, Japan – about 46%, Belgium – 50%. Almost 60% of the needs of Ukrainian enterprises for egg processing products today are provided by imports [68].

The top three Ukrainian egg processing enterprises, which correspond to the highest global level in terms of their technical and innovative level, include such poultry farms as the company “AVANGARDCO IPL” (LLC “Imperovo Foods”), LLC “Ovostar Union”, LLC “Berezanska Poultry Factory”. These enterprises build their work on the basis of new and modernized technologies: fermentation of egg products; deep separation of egg components; new technologies of pasteurization and sterilization of eggs using the equipment of the world's leading companies.

Processing of eggs into egg powder at domestic poultry enterprises requires modernization of production, introduction of modern technology and high-performance poultry crosses. Industry features, modern technologies and dynamics of demand for egg products determine the need to process at least 20% of the volume of egg produced, which allows flexible adaptation of supply to seasonal fluctuations in demand. The experience of the development of global agribusiness in the field of poultry farming suggests that the further expansion of the sale of natural eggs in shells on the Ukrainian market will be complicated. Thus, in the long term, production capacity for egg processing in the Ukrainian poultry business may increase by 2-3 times [136].

A special consumer of egg products is the oil and fat industry, which produces mayonnaise and mayonnaise sauces. The volume of mayonnaise production increases annually, the growth rate of production in 2012-2016 did not decrease below 12%. Statistics show that despite the global financial crisis, mayonnaise production continued to grow in 2012-2016. Ukrainian households

are gradually joining the culture of consumption of egg powder, which also stimulates the demand for egg products. Food industry enterprises often use imported analogues instead of Ukrainian egg ingredients. Thus, in 2015, the import of dry egg products accounted for more than 20% of the production volume of dry egg products. However, the share of imports in the purchases of food processing enterprises is estimated by experts to be around 50% [108].

Taking into account the decline in the production of poultry products in most specialized farms, including egg production, there is an increase in the specific weight of households in ensuring consumer demand for these products. In the total volume of egg production in 2013 auxiliary farms of the population occupied 63%, which forced specialized poultry enterprises to adapt to the change in the competitive situation. Thus, in connection with the arrival of eggs on the market from auxiliary farms of the population in March-June (the period of the end of winter molting) in order to increase the efficiency of management, almost all poultry enterprises switched to seasonal (one-time) stocking of poultry herds, expecting that the main production of eggs falls on the 1st and 4th quarters, when the price of their sale will increase. But the personal farms of the population cannot be serious competitors in the long term, since they are unable to ensure the proper quality of products, their compliance with sanitary standards, and their production costs are much higher.

The study of the market of poultry products shows that egg processing is not used in specialized farms of the Dnipropetrovsk region. Therefore, we believe that PPF “Agrocenter”, as a regional industry leader, it will have the advantage of being the first to enter the market with new products. Having analyzed the production and sale of eggs at the “Agrocenter” PPF it can be concluded that not all manufactured products of the enterprise are sold on the consumer market. Since the enterprise specializes in the production of chicken eggs and a certain part of their production is substandard, as well as eggs that have not been sold during the established period of their storage, we have proposed a model for processing these products into egg powder. It is used in

many branches of the food industry and has a long shelf life and simple production technology. Based on the production data of the “Agrocenter” PPF carried out an assessment of the economic efficiency of investment investments in the creation of a workshop for the production of dry egg powder [115].

Based on the results of the study of the equipment of the market of equipment for processing eggs into dry egg powder of various manufacturers, taking into account the production features of the enterprise, we offer the equipment of the Ukrainian manufacturer “METALIS” LLC of the Odesa region. This equipment for the production of dry egg powder has a number of advantages compared to other domestic and foreign manufacturers, including: low energy consumption; low metal capacity due to small structural dimensions; high consumer properties of the finished product due to environmental cleanliness production techniques; price advantage; small production areas; annual guarantee included in the cost of equipment; waste-free technology – processing of production waste into animal feed; low requirements for production infrastructure due to the possibility of operation of steam heaters of dryers with a steam pressure of 0.6-0.7 Mpa; quick payback.

The material used in the manufacture of food production equipment is only stainless. food steel. In the production of drying units, extraordinary design solutions were used, which made it possible to reduce their cost, make them compact, economical and highly productive compared to their Western counterparts. This equipment is manufactured taking into account many years of production experience and the use of advanced technology – drying products in a vibro-boiling layer of inert material, which guarantees the production of high-quality products that meet world standards.

Taking into account that the enterprise will process a certain part of its products, we chose less powerful equipment – URS-25 for the production of dry egg powder. This equipment produces dry egg powder, dry protein and dry yolk and solves the problems of waste-free technology. It is compact, easy to operate and does not require special personnel training. To ensure one hour of operation

of the installation, 80 liters of liquid egg products are needed, which is equivalent to about 2125 pcs. eggs. The yield of dry egg powder is 25 kg/h. The required area of the production space for the installation of the equipment is 18 m<sup>2</sup> [166].

Equipment costs (Table 3.6) are formed taking into account the full set of elements of the technological line and related works necessary for its commissioning. They include the cost of basic technical means, in particular: basic equipment, drying chamber, filtration system, dosing pump, receiving and exhaust tanks, fans, cyclones with powder collection tanks, air purification filter, sprayer, as well as control panel and technological process management.

In addition to the direct cost of the equipment, the calculations take into account the accompanying costs of an investment nature, which ensure the possibility of practical implementation of the project. These include transport costs, installation work and commissioning operations, without which it is impossible to put the line into operation and its proper functioning. Thus, the total amount of equipment costs reflects the full range of financial resources necessary to ensure technological readiness of production.

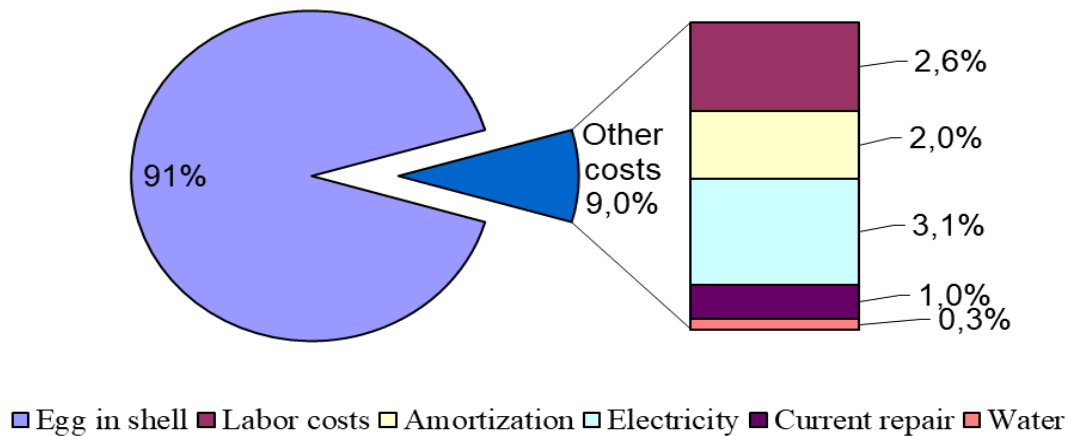
*Table 3.6*

**Capital costs for the installation of equipment for the production of URS-25 dry egg powder**

Cost items	Cost, UAH
Cost of equipment	800000,00
Cost of additional equipment	20000,00
Transport losses	4000,00
Construction and installation works	10000,00
Commissioning works	6000,00
Total	840000,00

*Source: calculated by the author*

The main item of production costs (Fig. 3.6.) there are natural eggs in shell (91%), minor electricity costs (3.1%), labour costs (2.6%), depreciation (2%), current repairs (1%) and water (0.3%).



**Fig. 3.1 The structure of production costs in the production of dry egg powder**

*Source: calculated by the author*

According to the calculations, 85 eggs, 43 litres of water and 1.4 kW of electricity must be used to produce 1 kg of dry egg powder (Table 3.7.). When the workshop is loaded in 1 shift with a duration of 8 hours and for 22 working days, the planned monthly production volume will be 4,400 kg of egg powder, and the planned cost of 1 kg will be UAH 80. At the same time, the average annual selling price of 1 egg will be UAH 1.24, and 1 kg of dry egg powder will be UAH 95. According to such indicators, the revenue from the sale of dry powder will reach UAH 418,000. per month.

*Table 3.7*

### Production costs of egg powder

Cost articles	Indicator, UAH
Cost of raw materials	320130,00
Water, drainage	1230,46
Electricity kWh	10962,00
Payment of labor with accruals	9084,12
Depreciation of equipment	7000,00
Current repair	3500,00
Total	351906,58

*Source: calculated by the author on the basis of production data of the "Agrocenter" PPF*

According to the technical characteristics of the equipment, it is necessary to use 9% of the monthly production of eggs for the operation of the workshop,

which includes 3% of the total production of eggs that were not used in the farm (non-standard and non-commercial in appearance and those that are not sold within the prescribed period), as well as processing of commercial eggs in the amount of 6% to avoid losses during seasonal fluctuations in demand for products. In order to avoid loss during the period of seasonal drop in consumer demand, we plan to also process a commercial egg in the amount of 3.12 million pieces together with the processing of a substandard egg. At the same time, the production of dry egg powder will amount to 53 tons per year, and commercial egg – 47 million 605 thousand pcs. (Table 3.8.)

*Table 3.8*

**Calculation of the economic efficiency of the production of dry egg powder**

Indicator	Really	Project option			
		Project years			
	2018	2019	2020	2021	
Additional investments, UAH Thsd	-	840,0			
Quantity of egg produced, Thsd pcs.	48973	48973	48973	48973	
Number of sold eggs, Thsd pcs.	47605	44485	44485	44485	
Number of unsold eggs, Thsd pcs.	1368	-	-	-	
Quantity of processed commercial egg, Thsd pcs.	-	4488	4488	4488	
The cost of gross production in current prices UAH Thsd	59124,3	63647,2	63647,2	63647,2	
-including egg, UAH Thsd	59124,3	58631,2	58631,2	58631,2	
- egg powder, UAH Thsd	-	5016,0	5016,0	5016,0	
Production costs, UAH Thsd:					
- incl. egg, UAH Thsd	42591,7	43725,6	43725,6	43725,6	
- egg powder, UAH Thsd	42591,7	39502,7	39502,7	39502,7	
- egg powder, UAH Thsd	-	4222,9	4222,9	4222,9	
Profit from product sales, UAH Thsd	16532,6	19921,6	19921,6	19921,6	
Net profit, UAH Thsd	13556,7	16335,7	16335,7	16335,7	
Net cash flow, UAH Thsd	-	16342,7	16335,7	16335,7	
Internal rate of return, %	-	58,3			
Investment profitability index	-	1,41			
Payback period, years	-	2,8			

*Source: calculated by the author*

Improving the marketing product policy on the basis of expanding the product range at the enterprise will allow to additionally receive about UAH 1 million. net additional profit, and capital costs are paid off within three years. Net reported income at an internal rate of return of 58.3% for the period of the standard service life of the equipment will be UAH 346.5 thousand. Thus, the expansion of production due to the processing of eggs will allow the enterprise

to increase the level of profitability of the industry's production by almost 7%. The results of the calculations show that it is expedient for the enterprise to implement this investment project, which will provide an opportunity to expand the range of products and their sales markets, increase profit and competitiveness.

The next stage of the feasibility of project implementation is the assessment of its risks. Risks must be understood as uncertainty related to the possibility of adverse conditions, situations and consequences during the implementation of the project. Such risks may threaten our project, namely: risk associated with the uncertainty of the political situation in the country; risk associated with measures of state influence on the field of taxation, changes in legislation; risk associated with the solvency of the population; force majeure risks; impossibility of selling products; production of lower quality products; increasing the estimated cost of the project; rapid obsolescence of equipment.

*Table 3.9*

**Groups of simple risks for identifying priorities**

Simple risks	Priorities
<b>1. Political risk:</b>	1
Changes in the law	
Foreign economic risks	
Provision of state subsidies and allocations	
<b>2. Business risk:</b>	2
Increase in feed prices	
Reduction of prices for finished products	
Reduced demand for finished products	3
<b>3. Production risks:</b>	
Output of lower quality products	
The risk of increasing the specific weight of costs	
Decline in output	
Reduction of product sales volumes	
Increase in losses of working hours	4
Growth of the wage fund	
<b>4. Innovation risks:</b>	
Inaccuracy of project documentation	
Change in the cost of capital and the level of inflation	4
Untimely supply of equipment	

*Source: adapted by the author*

Having decided on the list of risks, we calculate the importance of one priority over another:

$$f = \frac{W_1}{W_k}, \quad (3.11)$$

where  $W_1$  – risk group with a stronger priority;  $W_k$  – the risk group with the lowest priority.

$$f = \frac{1}{4} = 0,25$$

Let's take determine the weight with a lower priority according to the formula:

$$W_k = \frac{2}{k \times (f + 1)}, \quad (3.12)$$

where  $k$  – number of risk groups.

$$W_k = \frac{2}{4 \times (0,25 + 1)} = 0,4$$

The next step is to determine the weight of other priority groups using the formula:

$$W_j = W_k \times \frac{(k - j) \times f + j - 1}{k - 1}, \quad (3.13)$$

where  $j$  – priorities.

$$W_1 = 0,4 \times \frac{(4 - 1) \times 0,25 + 1 - 1}{4 - 1} = 0,1; \quad W_2 = 0,4 \times \frac{(4 - 2) \times 0,25 + 2 - 1}{4 - 1} = 0,2;$$

$$W_3 = 0,4 \times \frac{(4 - 3) \times 0,25 + 3 - 1}{4 - 1} = 0,3; \quad W_4 = 0,4 \times \frac{(4 - 4) \times 0,25 + 4 - 1}{4 - 1} = 0,4.$$

Let's take determine the weight of simple factors for each simple risk included in the corresponding priority group according to the formula:

$$W_i = \frac{W_j}{M_j}, \quad (3.14)$$

where  $W_j$  – weight of simple risks by priority groups;  $M_j$  – the number of risks included in the priority group.

$$W_1 = \frac{0,1}{3} = 0,03; \quad W_2 = \frac{0,2}{3} = 0,07; \quad W_3 = \frac{0,3}{6} = 0,05; \quad W_4 = \frac{0,4}{3} = 0,13.$$

All simple risks within the same group have the same weight.

Table 3.10

### Priority of risk occurrence

Risks	Experts			Average probability, P <sub>i</sub>
	first	second	third	
<b>1. Political risk:</b>				
Changes in the law	37	46	43	42
Foreign economic risks	31	36	38	35
Provision of state subsidies and allocations	41	39	37	39
<b>2. Business risk:</b>				
Increase in feed prices	35	37	40	37,3
Reduction of prices for finished products	45	39	45	43
Reduced demand for finished products	48	52	46	48,6
<b>3. Production risks:</b>				
Output of lower quality products	31	30	29	30
The risk of increasing the specific weight of costs	33	35	36	34,7
Decline in output	63	61	60	61,3
Reduction of product sales volumes	54	52	50	52
Increase in losses of working hours	32	38	30	33,3
Growth of the wage fund	48	42	39	43
<b>4. Innovation risks:</b>				
Inaccuracy of project documentation	15	14	16	15
Change in the cost of capital and the level of inflation	13	12	14	13
Untimely supply of equipment	17	16	11	14,7

*Source: calculated by the author*

Using the expert method, we will determine the average probability of risk occurrence and make a final assessment of it according to the formula:

$$R = \sum W_i P_i \quad (3.15)$$

Thus, the average weight for all risks is 30.79, which indicates the relative riskiness of the project.

Table 3.11

### Final project risk assessment

Simple risks	Weight, $W_i$	Probability, $P_i$	Point, $W_i \times P_i$
<b>1. Political risk:</b>			
Changes in the law	0,03	42	1,26
Foreign economic risks	0,03	35	1,05
Provision of state subsidies and allocations	0,03	39	1,17
<b>2. Business risk:</b>			
Increase in feed prices	0,07	37,3	2,6
Reduction of prices for finished products	0,07	43	3
Reduced demand for finished products	0,07	48,6	3,4
<b>3. Production risks:</b>			
Output of lower quality products	0,05	30	1,5
The risk of increasing the specific weight of costs	0,05	34,7	1,74
Decline in output	0,05	61,3	3,07
Reduction of product sales volumes	0,05	52	2,6
Increase in losses of working hours	0,05	33,3	1,7
Growth of the wage fund	0,05	43	2,15
<b>4. Innovation Risks:</b>			
Inaccuracy of project documentation	0,13	15	1,95
Change in the cost of capital and the level of inflation	0,13	13	1,69
Untimely supply of equipment	0,13	14,7	1,91
Total	1	-	30,79

Source: calculated by the author

Risks are caused, first of all, by technical, technological and organizational decisions of the project, as well as fluctuations in production volumes, sales prices of manufactured products and the cost of used resources. In the scientific economic literature, questions about the specific values of risk correction for different branches of agriculture and different types of projects are poorly studied. The generalization of existing studies allows us to propose our own approximate values of corrections for investment risk in the industry (Table 3.12).

Table 3.12

### Estimated value of the risk correction

The amount of risk	Probability of risk	Amount of risk correction, % (N)
low	0-25	1-2
Medium	26-50	3-5
High	50-75	6-8
Quite high	76-100	8-10

Source: author's development

Then we suggest calculating the discount rate according to the formula:

$$r = r_{\bar{o}a3} + I + N , \quad (3.16)$$

where  $r$  – discount rate, %;  $r_{\bar{o}a3}$  – basic risk-free discount rate, %;  $I$  – rate of inflation, %;  $N$  – the amount of risk correction, %

$$r = 17 + 13 + 3 = 33\%$$

In order to increase the objectivity of the predictive assessment of the effectiveness of the investment project, we propose to use a coefficient characterizing the level of influence of the expected consequences of the manifestation of the risk of this project, which is calculated according to the formula:

$$K = 1 - \frac{NPV_r}{NPV} , \quad (3.17)$$

where  $K$  – impact factor of the expected consequences of the manifestation of investment project risks,  $NPV_r$  – the value of net reduced income taking into account risks,  $NPV$  – the value of net present income excluding risks.

If the value of the coefficient  $K$  is close to 0, this characterizes the presence of the investment project with a margin of resistance to the consequences of the manifestation of risks during its implementation. Conversely, the closer the value  $K$  to 1, the greater the impact of risks on this investment project. We will determine the value of the net reduced income taking into account the risks and calculate the indicator of the expected consequences of the manifestation of the risks of the investment project (Table 3.13).

*Table 3.13*

**The level of influence of the expected consequences of the manifestation of risk**

$NPV$	$NPV_r$	$K$
346,48	291,21	0,16

*Source: calculated by the author*

Therefore, the investment project has a margin of resistance to the consequences of the manifestation of risks even in the development of an unfavorable scenario. We believe that taking into account the mentioned proposals will contribute to increasing the objective assessment of the forecast efficiency of the investment project in the conditions of the transformational economy of Ukraine.

However, despite the detailed development of this project, there is always a possibility of unforeseen circumstances that may negatively affect the company's activities. To assess the opportunities and threats coming from the external environment, as well as the internal limitations of the enterprise, we will use situational analysis based on SWOT analysis. This analysis consists in identifying the factors of the internal and external environment of the organization that affect the work of the enterprise to varying degrees and dividing them into four categories: Strengths, Weaknesses, Opportunities, Threats. In the table 3.14 presents the SWOT matrix compiled for the "Agrocenter" PPF.

The conducted SWOT analysis made it possible to identify the strengths and weaknesses of the enterprise, opportunities and threats, as well as the degree of their influence on increasing the efficiency of its activities. A significant impact on increasing the efficiency of the enterprise has the possibility of reducing the cost of production, and increasing the volume of its sale will allow to get more profit and eliminate such a threat as the loss of financial independence.

Table 3.14

**SWOT matrix for determining the directions of development of PPF  
“Agrocenter”**

Factors that determine the efficiency of work	Factors that determine the reliability of business activities	
	Opportunities:	Threats:
Factors that determine the efficiency of work	<b>Opportunities:</b> 1. Increasing the volume of implementation. 2. Updating fixed assets. 3. Expansion of product sales markets. 4. Improving product quality. 5. Involvement of qualified specialists. 6. Use of the latest production technologies.	<b>Threats:</b> 1. Economic instability in the country. 2. High level of competition in the industry. 3. Imperfection of the legislative framework. 4. Loss of financial independence. 5. Decrease in consumer demand. 6. Rising prices for fuel and energy resources.
<b>Strengths:</b> 1. The close location of production facilities to the city. 2. Use of modern technologies for raising and keeping poultry. 3. Use of modern automated equipment. 4. Product differentiation. 5. Availability of long-term connections with regular buyers.	Reduction of production costs. Increase in production capacity. Expansion of the product range of products. Modernization of production.	Application of resource-saving technologies. Development of marketing activities of the enterprise. Strengthening competitive advantages.
<b>Weaknesses:</b> 1. Shortage of payment funds. 2. Insufficiently developed advertising policy at the enterprise. 3. High staff turnover. 4. Lack of own retail network. 5. Wear and tear of the main production assets. 6. Product uniqueness.	Increase in profit due to increase in production and sale of products. Increasing the turnover of working capital. 3. Increasing market share.	Optimization of the production process. Development of an effective marketing strategy.

Source: own research

For the investigated enterprise, it is necessary to determine the break-even volume of production, which will allow to correctly form one’s own competitive behavior in the market environment. In the long term, PPF “Agrocenter” should apply active actions to strengthen its own market positions by expanding market share and differentiating products.

To increase the economic efficiency, the enterprise should choose an intensive path of development of product production at all stages of the technological process due to the use of the latest high-performance equipment and resource-saving technologies. This path of development will contribute to the stabilization of product production and meeting the needs of the population in quality food products. The introduction of new capacities for the production of dry egg products will allow the enterprise to meet the needs of the food industry in the future, to expand its own market for the sale of poultry products.

The enterprise also needs to pay sufficient attention to increasing poultry productivity. At the same time, the main attention should be paid to the reconstruction of poultry premises, the purchase of equipment and modern automated equipment, the introduction of innovative technologies for harvesting fodder grain (preservation of wet grain using preservatives of chemical and biological origin, which will make it possible to reduce energy consumption by 5-6 times compared to drying and to increase the productivity of poultry by 8-10 % during its feeding) and keeping poultry using modern equipment that will ensure full mechanization, automation of production processes and highly technical incubators, which will contribute to the withdrawal of a batch of homogeneous young animals, aligned with age and weight, which are most suitable for stocking industrial poultry breeding workshops, which will contribute to improving the reproduction indicators of the herd and reproducing its genetic potential.

The organization of work at the enterprise must be rational, that is, take into account the achievements of science and best practices as much as possible, ensure full and effective use of labor force and other factors of production in order to obtain better economic results at each stage of production. The implementation of these measures will contribute to the sustainable development of the enterprise, which will allow to increase the production of products, improve the quality of poultry products and the profitability of the “Agrocenter” PPF.

### **3.3 Formation of the logistics system of poultry enterprises**

Poultry farming is one of the most knowledge-intensive and dynamic branches of the agro-industrial complex, characterized by rapid rates of reproduction of livestock, intensive growth, high productivity and viability, the lowest costs of living labor and material resources per unit of production. Such precocity of this industry ensures a rapid turnover of invested funds and dynamic development thanks to a diversified type of product production. This production can include both meat, egg, and meat-egg areas of specialization.

A feature of the current state of development of the poultry industry during the last decade is the dynamic growth of the number of poultry of all species, the increase in production volumes, the increase in domestic demand and the export of products. Currently, the poultry industry combines enterprises of various forms of ownership, which specialize in the production of breeding products, food eggs, poultry meat, as well as incubator and poultry enterprises for the production of eggs, which work to restore the poultry population at poultry enterprises – breeding plants and breeding producers.

The Ukrainian market of poultry products is a multifunctional complex that includes not only the sphere of production of poultry products, but also has a close connection with other industrial productions, such as: production of compound feed, agricultural machinery, etc.; with the processing industry (enterprises for the processing of poultry products); with light industry (enterprises for sewing production using down and poultry feathers) [82].

The main task of any agricultural enterprise is to meet the needs of consumers in food products. If, in the conditions of an economy based on competition, an agro-industrial enterprise fails to satisfy the wishes of buyers, it is doomed to disappear from the “map” of business. Conversely, manufacturers whose products meet or exceed consumer requirements get the best opportunities for growth and prosperity. In this case, the enterprise receives

profit and satisfies the requirements of other interested groups – employees and owners of the enterprise, its creditors and society as a whole.

Poultry enterprises are complex production systems that consist of a set of interconnected elements between which certain functional connections and relations have been established. The functioning of such enterprises is characterized by such features as: the closure of the full production cycle; continuity of the production cycle; the given intensity of production; specifics of the formation of product types; a wide range of products; the difference in demand for different types of products; temporary restrictions on the sale of some types of products.

In modern business conditions, poultry enterprises face many problems, starting with the purchase of compound feed and ending with the sale of finished products to end consumers, which is directly related to the constant increase in the cost of poultry products. Undoubtedly, in order to develop effectively, the poultry industry must successfully manage its product portfolio. The degree of success of the industry depends on how successfully each direction is managed.

In order to survive in the conditions of the crisis at the moment, the heads of many Ukrainian enterprises come to the conclusion about the need for a strategic approach in management. The need for a strategy that is a synthesis of a strong business idea and a set of real actions that can lead this business concept to create a real competitive advantage in the market. One of the effective tools for managing the economic activity of market subjects, which allow solving these problems, is logistics. This direction of activity helps market structures to form an effective strategy for ensuring competitive advantage by increasing the efficiency of the process of turnover and related services, which allows to more fully satisfy the needs of consumers [63].

Logistics, as a scientific and practical direction, began to develop in Ukraine in the 90s of the 20th century in the context of the development of market relations. Increased interest in it is due to a number of factors: reaching the limit of production efficiency, rapid growth of product transportation costs,

fundamental changes in the philosophy of stocks, creation of product channels, rapid development of computer technologies, transition from the concept of the seller's market to the concept of the buyer's market [35].

From different points of view, logistics is considered as one of the functions of marketing in the modern business environment. The main goal of logistics is to focus the resource capabilities of the enterprise to obtain sustainable competitive advantages in the time and spatial parameters of the environment of economic relations based on the integration of a set of flow processes by maximally meeting the needs and requirements of the consumer of the manufactured products [77].

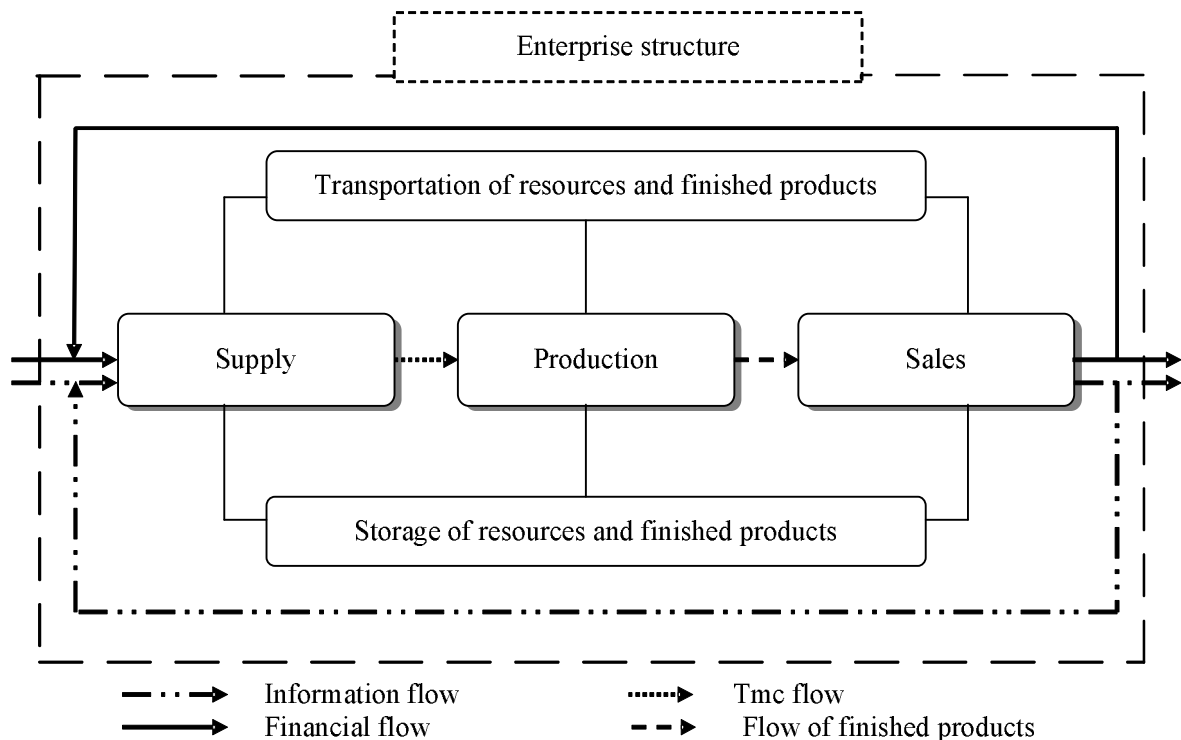
The task of logistics is to create an integrated, effective system of managing material flows and optimizing flow processes in order to obtain the most efficient work of poultry enterprises, increase its market share and gain advantages over competitors by optimizing inventory management, storage and transportation. Today, domestic and foreign specialists distinguish several types of logistics or functional areas: logistics related to ensuring the production of materials (purchasing logistics), production logistics, sales (marketing) logistics. There are also transport and warehouse logistics, which are essentially an integral part of each of the three considered types. An integral part of all types of logistics is also the mandatory presence of a logistics information flow, which includes the collection of data on the material flow, their transmission, processing and systematization, followed by the issuance of ready-made information. This subsystem is referred to as information logistics [120].

The effectiveness of the organization of logistics at the enterprise depends on the formation of the logistics system of the enterprise. A large number of works by both Ukrainian and foreign scientists [6; 9; 27; 44; 58; 73; 87; 97; 142; 156; 160; 171; 173; 186; 190; 205] and others are devoted to the study of logistics systems and its individual elements at enterprises. The logistics system is an important element of the organization of the poultry enterprise and is a set of interconnected elements between which there is a certain connection. Its

application allows you to integrate various processes of the enterprise and organize internal processes with minimal costs while optimally adapting the internal environment of the enterprise to external factors affecting its activity.

Based on the known definitions [22; 65; 67; 97; 178] and based on the main task of logistics, in our opinion, the following definition of a logistics system can be proposed: a logistics system is a set of interconnected and interacting participants in the economic processes of formation and movement of flows, united by a common goal, which ensures the efficiency of customer service at minimal total costs [204].

When forming a model of a logistics system (Fig. 3.2) it is necessary to take into account three main components of the enterprise: production, supply and sales, which make it possible to comprehensively assess the operation of this system. The main criteria for evaluating the operation of a given logistics system will be cost minimization, profit maximization or risk minimization [49].

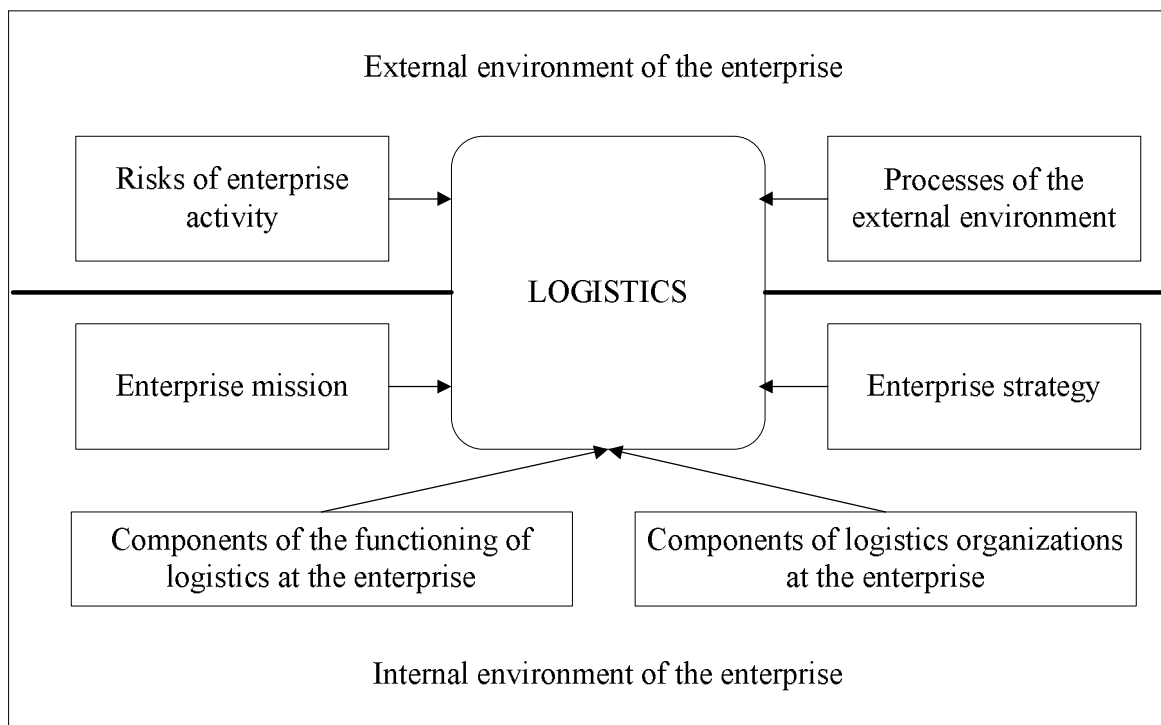


**Fig. 3.2 Poultry enterprise logistics system model**

*Source: adapted by the author*

It should be noted that a modern developed enterprise should be based on the integrated work of supply, production and sales departments. Building such a model of the logistics system enables the enterprise to: optimize production through its reorganization or reform; improve competitive advantages; conquer new sales markets; determine the main factors affecting production.

Undoubtedly, its work is influenced by departments of marketing, strategic development, foreign economic activity, etc. It is also necessary to take into account the factors that have a direct impact on the formation of the logistics system of the enterprise. They can be divided into external and internal factors (Fig. 3.3). As you can see, the formation of the logistics system of a poultry enterprise is influenced by the mission of the enterprise, on the basis of which the goals of conducting economic activity are formed. There must be a clear relationship between them.



**Fig. 3.3 Factor model of the formation of the logistics system of poultry enterprises**

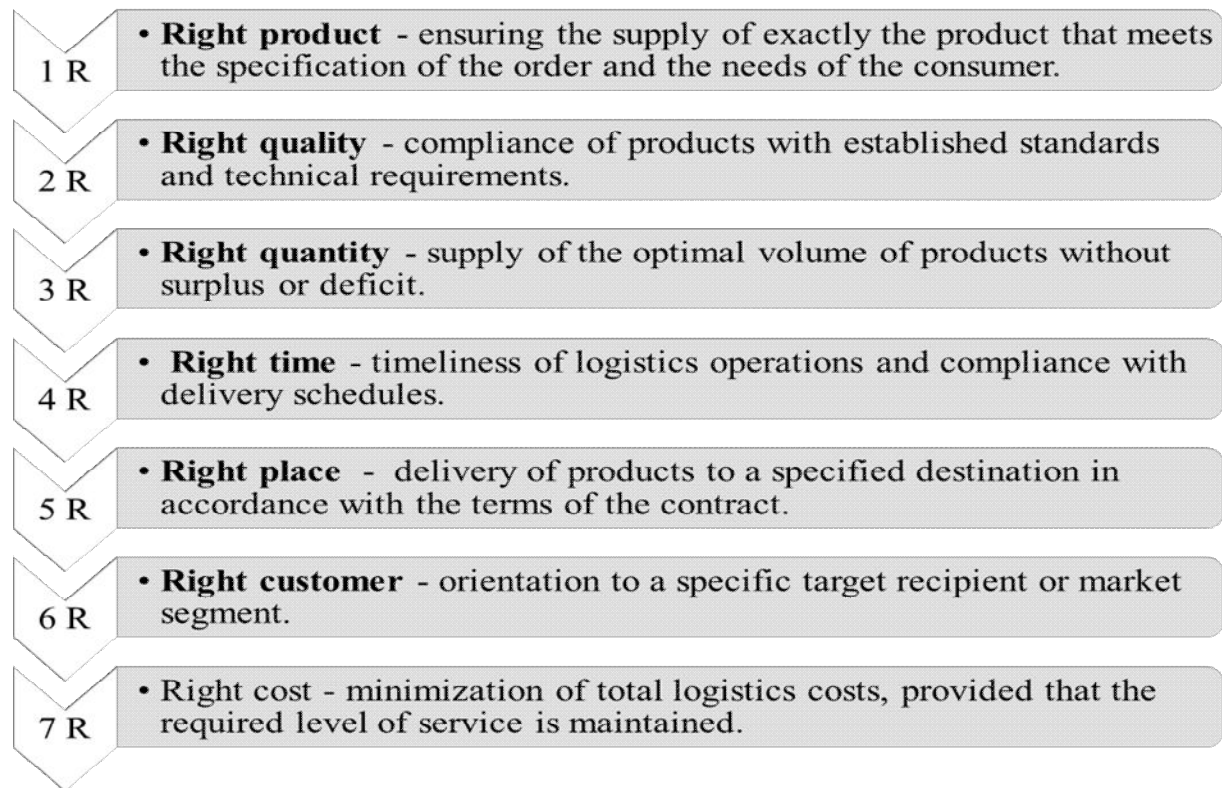
*Source: adapted by the author*

The formation of the logistics system of the enterprise should take place in the same direction as the mission and goals of this enterprise. This will make it possible to specifically and accurately calculate the efficiency of the enterprise's functioning; identify actions and decisions that prevent effective economic activity; ensure the implementation of mutually supporting (synergistic) functions of the logistics system; ensure the correction of the functioning of the logistics system over time, since all the goals of the enterprise have a short-, medium-, or long-term forecasting period [122].

The company's strategy is related to the company's activities and is aimed at fulfilling its main mission. Implementing its strategy, the company uses material, labor, financial and information resources. And hence the obvious connection between the processes of formation and functioning of the logistics system and the strategy of the enterprise.

When developing a logistics strategy, it should be taken into account that the criterion for the effectiveness of the implementation of logistics systems is the degree of achievement of the final goal of logistics activity, which is expressed by seven logistics rules – 7 R (Fig. 3.4). The goal of logistics activity is considered achieved if these seven rules are fulfilled, that is, the necessary products, of the required quality, in the required quantity are delivered at the right time, to a certain place and with minimal costs.

The criterion of logistic optimization should be considered the minimization of aggregate costs during the entire movement of the material flow. But this can be achieved only if the existing system of accounting for production and circulation costs allows us to allocate logistics costs. The basis for the analysis of the logistics system is the concept of total costs. All elements of the system – warehousing, transport, stocks and others – depend on each other. Attempts to minimize the costs of any individual activity can lead to an increase in the total cost of logistics and vice versa, by increasing the costs of some activities in order to reduce the costs of others more, minimum total costs are achieved [117].



**Fig. 3.4 Logistics rules**

*Source: Adapted by author [64; 167; 188]*

The implementation of a logistics management system at the enterprise will allow to accelerate the turnover of invested capital, reduce the cost of production and ensure the satisfaction of consumer needs.

The main problems of poultry enterprises of the Dnipropetrovsk region include: increase in the cost of feed; substantial costs for the transport of feed and finished products; lack of a corporate management information system; lack of a clearly expressed strategy for the development of enterprises; insufficient support from public authorities.

Today, enterprises producing poultry products are able to solve these problems on their own and increase the efficiency of their work at the expense of the company's internal reserves. Among the most important of them, we include strengthening actions in the field of distribution logistics.

Distribution logistics is an integral part of the general logistics system. It covers the entire chain of the distribution system: marketing, transportation and

warehousing. It should be noted that the spheres of production, sales and consumption of poultry enterprises operate in isolation from each other and are not interconnected. One of the tasks of logistics is to cover these areas and organize comprehensive interaction between them with the least costs.

In a holistic distribution strategy, two main provisions can be distinguished: research of market needs; means and methods of the most complete satisfaction of needs. Thus, the main purpose of the distribution system is to supply products at the right time and place, of the right quality, in the required quantity. Currently, in all developed countries, almost all foreign trade turnover, as well as most of domestic trade, is carried out through regional logistics centers. They are important for maintaining the country's economic potential.

In our opinion, in the field of logistics of turnover of products of poultry enterprises, the solution of the following main tasks is of greatest relevance:

- choosing between purchasing your own warehouse or using a general use warehouse;
- the choice between the creation of a single centralized warehouse or several centralized distribution centers with the determination of their capacity and places of deployment;
- optimization of product delivery routes in order to save costs or better meet demand.

It should be noted that poultry enterprises sell manufactured products, first of all, within the Dnipropetrovsk region. The main attention is paid to the development of our own network of stores and small wholesale warehouses, through which up to 80% of finished products are sold.

A logistical approach to the distribution of products is reduced to reducing additional costs and thereby achieving the production of competitive and affordable products.

In order to improve the distribution system, it is necessary to carry out a number of organizational measures in the management of internal logistics

processes at poultry enterprises. In this regard, it should be noted that the essence of the logistics system of enterprise management is that any enterprise can be considered as a single logistics system, namely: strategic decisions on the economic policy of the enterprise and the movement of material flows are made on the basis of calculating the efficiency and total costs of the entire logistics chain; a high level of integration of the functions of marketing, supply, production, sales, and information of the logistics chain is ensured.

Logistics management involves the refusal to make decisions based on a separate consideration of supply, sales, work with transport companies, production program contracts and the transition to system planning and organization, which allows using the possibilities of rationalization inherent in the modern concept of material resource management.

The implementation of logistics management of the enterprise takes into account the following:

- changing the mentality of the owners and adjusting the goals of the enterprise;

- reorganization of the management system with the creation of a service for the implementation of the company's logistics strategy and its implementation;

- training of specialists who will be engaged in the organization and calculation of the effectiveness of logistics procedures;

- creation of a complex information and logistics system of the enterprise.

Solving production optimization problems is impossible without appropriate information support for the logistics process. It is important to correctly and rationally organize internal information flows at the enterprise through the development, implementation and use of information systems for managing material and financial flows. Such systems allow logistics service specialists to make the right management decisions when performing various logistics operations. Therefore, it is necessary to develop a single system of

automation of information flows, which will unite the information systems of each division of poultry enterprises.

The information system is an important component of the logistics structure that unites and coordinates supply, production and sales. The tasks faced by the heads of poultry enterprises in the implementation of logistics principles lead to the need to create an information infrastructure that would allow collecting, organizing and transmitting information. This can be achieved by setting up a corporate information network of poultry enterprises [171].

In our opinion, the formation of the company's information network will contribute to more effective management of production processes and will make it possible to become a full member of the logistics system. The importance of solving this issue is due to the desire to qualitatively improve economic indicators and improve the financial condition of the enterprise due to the transfer of the current enterprise management system to new information technologies using modern software products, computer equipment and computer networks. Currently, this approach to improving the enterprise management system is an integral part of the activities of enterprises that are successfully developing.

Today, in all developed countries, almost the entire circulation of foreign trade, as well as most of the domestic turnover, is carried out through regional logistics centers. They are important for maintaining the country's economic potential. The problem of effective management of product supply, provision of trade and warehouse space is especially relevant. The customer is interested in reducing logistics operations and packaging poultry products, therefore he often needs to supply products "just in time" and gives a clear preference to prepackaged and ready-to-sell products.

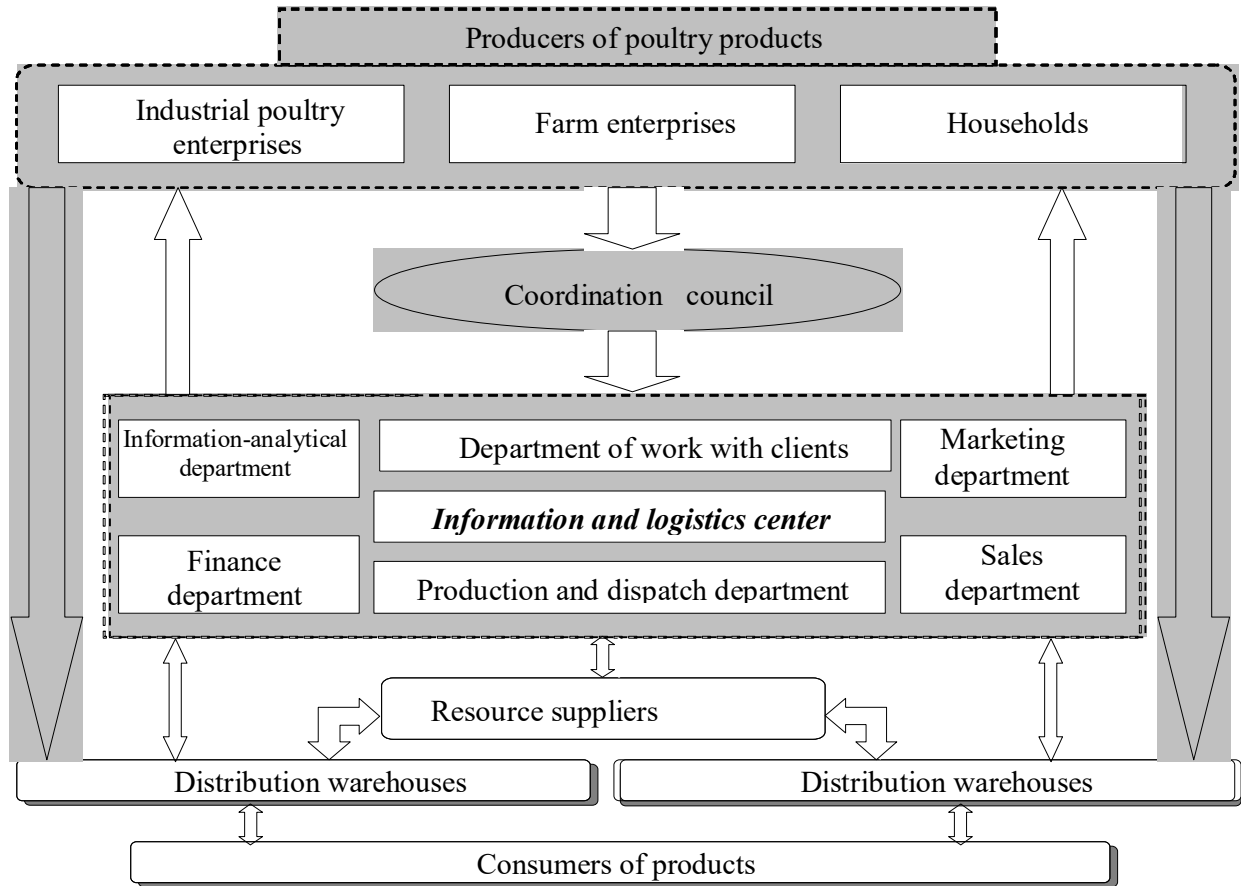
Employees of public catering chains are also interested in uninterrupted supplies of poultry products in the required assortment, of high quality and ready for preparation without preliminary processing. Trade networks are interested in cooperating with well-established market regional producers and

suppliers of poultry products who will be able to guarantee quality products at an acceptable price.

In order to improve the entire logistics system of this market, it is expedient, in our opinion, to create distribution warehouses that will be located on the territory of the Dnipropetrovsk region and to establish potential service areas for these warehouses. When creating distribution warehouses, it is necessary to determine the type of activity (distribution or retail) and the frequency and volume of products that will be shipped. An important point when working with poultry products is the transience of its shelf life.

Rationalization of commodity flows is carried out during the creation and functioning of distribution centers. In the field of poultry farming, distribution logistics can be interpreted as a system of organizational promotion of manufactured products to the market, based on the integration of the efforts of enterprises producing poultry products, commercial intermediaries, procurement organizations and other participants in the process of their distribution and exchange. In order to meet the needs most fully, with maximum efficiency for poultry enterprises, we propose the creation of a single information and logistics center (Fig. 3.5), on the basis of distribution warehouses, which will become a link between producers of poultry products and their consumers, will combine the flows of logistical information into a single network to coordinate the actions of all producers of poultry products with the organization of distribution processes and will also contribute to increasing competitiveness and production efficiency.

It should be noted that the creation of an information and logistics center will contribute to the improvement of the organization of transport connections by increasing the consistency of the operation of various types of transport; optimization of settlement systems between participants of logistics chains; reduction of product supply time due to reduction of downtime; organization of comprehensive customer service; optimization of loading of transport infrastructures; increasing the competitiveness and efficiency of this production.



**Fig. 3.5 Organizational structure of the information and logistics center**

*Source: adapted by the author*

It should also be noted that when creating such a center, it is necessary to take into account the peculiarities of the type of activity; incoming and outgoing cargo flows; the required level of logistics service, taking into account the specifics of the types of activities and prospects for the development of companies; customer requirements for the level of logistics service; the coefficient of development for the future according to business directions; opportunities to realize the company's goals through the introduction of new warehouse technologies and equipment [28].

As a result of the creation of such a center, the marketing, sales, financial and commercial services of poultry enterprises will be merged. The functioning of this logistics center will allow to organize the work of its structural divisions

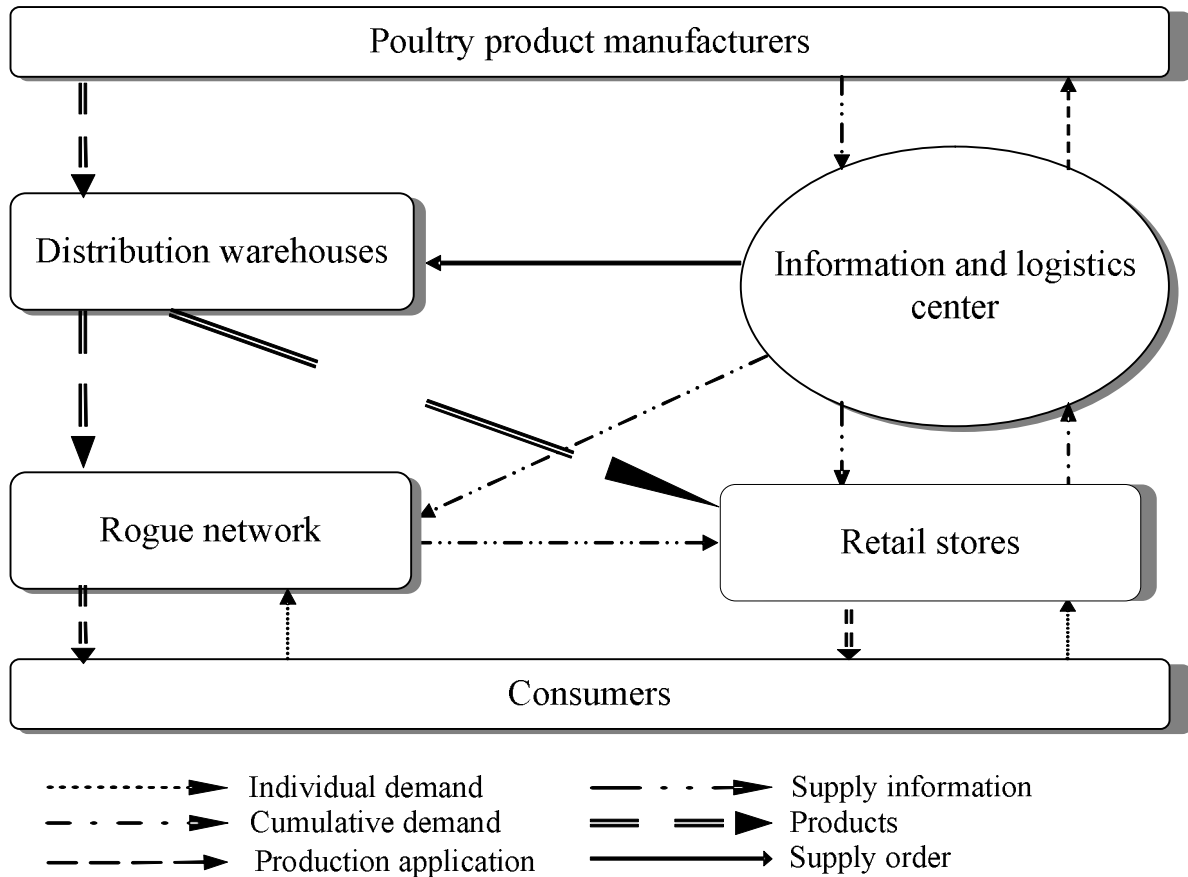
on the basis of independence and economic responsibility for the results of sales activities of manufacturing enterprises, will carry out management, planning and movement of material, financial and information flows [126].

Information flows are connecting links of the logistics system. The information network provides for the formation of databases, communications within the center, the presence of a set of measures for making operational decisions. The growing role of information flows in modern logistics, in our opinion, is due to the following reasons: for the consumer, information about the status of the order, availability of goods, delivery times, etc. is a necessary element of consumer logistics service; the availability of complete and reliable information enables the need for inventories and labour resources to be reduced by reducing the uncertainty of the level of demand; information increases the flexibility of the logistics system in terms of how, where and when resources can be used to achieve competitive advantages [126].

The information flows that characterize the decision at the distribution stage include data on the execution of the order, that is, the time of receipt and processing of the order, the formation of shipment to the selected stock placement point, the time of dispatching, etc. The scheme of interaction of the participants of the logistics system and the place of the information and logistics center in the logistics system of the poultry products market are shown in fig. 3.6.

The information and logistics center is formed on the basis of the central distribution warehouse and is a connecting link between producers of poultry products and their consumers.

The distribution system includes a network of distribution warehouses located in the region. The main goal of the creation of such distribution warehouses by manufacturers of poultry products is to form a wide range and improve the quality of service to consumers of these products.



**Fig. 3.6 Scheme of interaction of participants of the logistics system**

*Source: adapted by the author*

The proposed scheme for the distribution of poultry products involves, in our opinion, the involvement of a specialized cargo carrier in the logistics distribution system on a contractual basis. This will reflect the main factor of distribution efficiency – specialization. When talking about the main distribution functions, there is no such need for each channel member to deal with them. The advantage of some over others in certain types of activity is the economic basis of specialization. This approach will allow the transport units of poultry enterprises to reduce the number of service personnel and motor vehicles, orienting them to ensure the activities of domestic and specialized transport.

In our opinion, the work on the organization of the logistics system can be implemented now, while the work on the integration of poultry enterprises with enterprises of related industries and retail based on the principles of the logistics

concept of SCM (Supply Chain Management) is a matter of the future that requires phased implementation.

Therefore, anticipating that in the coming years it will be possible to observe a stable increase in the consumption of chicken meat as an available source of animal protein, a decrease in the consumption of pork and beef, taking into account their high price. The creation of a fully functional logistics center for the production of poultry products has favorable opportunities for increasing competitiveness and production efficiency. International experience proves that the development of poultry enterprises can be carried out more efficiently if it takes place within the framework of a specialized industry cluster – competing groups of producers and processors of poultry products, transport and logistics organizations scientific and innovative system and organizations of the promotion and sales system, with the aim of joint development and use of the raw material base, rational use of production capacities, reduction of added value costs along the entire chain from the production of raw materials to the sale of final products, which, in our opinion, will ensure stable economic growth of the poultry industry and a more one-dimensional distribution of income from the sale of final products; growth of domestic investments; increasing the level of competitiveness of participants; improvement of the business climate; optimization of trade relations.

### **3.4 Formation of a strategy for ensuring the competitiveness of poultry enterprises**

The initial aspect of competent and effective management of the competitiveness of a poultry enterprise is management's understanding of its importance, but such an understanding will not give anything in the absence of the necessary resources – from material and financial to informational. A high level of staff competencies can ensure the entire process of competitiveness

management, although the availability of other resources, guaranteed by effective operational activities in the past and present, is necessary. The main source of new and exclusive competitive advantages in the modern economy is the strategic nature of the competitiveness management process. Under the influence of external factors, it is able to create a competitive advantage and ensure the production of quality products and services is competitive on the foreign and domestic markets. “Whatever the business goals, but if they are not accompanied by a desire to improve the enterprise itself and its business processes, then we can only expect short-term results. It is better to move more slowly towards the achievement of long-term goals and a long-term existence in the market, to provide prosperity to its employees and other interested parties” [30].

Under changing market realities, relative uncertainty and instability of the external environment, in order to preserve and increase their competitiveness, poultry enterprises need to focus not only on the current state of affairs, but also on the development of a long-term development strategy – such a line of behavior that would allow them to keep up with the changes taking place in the surrounding market environment.

The competitiveness of the enterprise as an object of strategic management is one of the integral characteristics used to analyze the state of the enterprise on the market, which we proved in the previous sections of the study. In order for an enterprise to be competitive, it is necessary to be able to determine and effectively use its competitive advantages in competition. At the same time, all efforts should be directed to the development of those qualities that distinguish the enterprise from potential competitors. The high competitiveness of the enterprise is a guarantor of obtaining a high profit.

The use of strategic management of competitiveness in modern conditions determines the essence of all production and sales activities of the enterprise: determines its direction; the structure of marketing research: processes of studying consumer demand, planning the range of goods, their

market promotion and pricing; sets certain goals for each structural division of the enterprise, which are consistent with the general target attitudes of the enterprise; initiates the coordination of the efforts of the divisions in achieving the assigned tasks; forces the enterprise to assess its weaknesses and strengths in terms of opportunities and threats from the environment and competitors; models alternative actions; forms the basis of effective distribution of available resources [99].

The management of the poultry enterprise is aimed at solving issues related to the growth of the level of competitiveness and labor productivity, improving planning; increasing the effective organization of business processes and their automation; increasing the technical armament of labor; changes in labor morals, formation of skills to analyze the situation, work collectively; solving social and environmental problems. At the same time, the field of management should include new approaches to the development and evaluation of strategy implementation, improvement of labor relations, development of style and work methods, qualification of senior management in accordance with new requirements. In these conditions, more complex management and control systems are needed in relation to agricultural enterprises, which lead to a change in the mechanism of formation and evaluation of the development strategy. Not only is a detailed strategic analysis needed that links perspectives and goals to each other to develop a development strategy. Methods of proving, transferring the development strategy at the management level, as well as evaluating the strategy of its implementation are also needed. All this requires agricultural enterprises to solve strategic problems of improving their activities.

Provided that the rate of production decreases, agricultural enterprises should make operational decisions based not only on possible immediate consequences, but also on long-term development strategies. Therefore, there is a need to manage the development of agricultural enterprises based on compliance with its goals and strategies. The main tasks of the enterprise become both the development of a system of development goals and strategies,

and the search for a mechanism for their evaluation during the implementation and formation of competitive advantages [51]. Many scientists justify the need and “value” of strategic management of the competitiveness of an agro-industrial enterprise by the fact that it allows the owners and managers of the relevant enterprise:

- to focus on strategic alternatives instead of focusing on everyday affairs;

- justify potentially efficient allocation of resources;

- assist in strategic analysis and decision-making;

- create a system of strategic management and control, focusing on strategic assets and skills, setting goals and developing programs taking into account strategic directions;

- ensure horizontal and vertical communications and the functioning of the coordinating systems of the enterprise;

- to help the enterprise cope with changes in the face of a changing external environment [1].

Among the main differences between strategic management and traditional (operational and reactive management), the following are usually distinguished:

- the content of system-forming elements of strategic management differ significantly from formally similar elements of operational management (a prospective business plan for 5-10 years and an annual business plan are different in complexity and development methods, very different models of current and long-term motivation, etc.);

- different target orientations of the analyzed types of management: as a rule, the current tasks of management do not include the development and implementation of large-scale projects for improving the formed business model; strategic management guidelines are precisely such projects, the effect of which should be prejudicial to future threats to the external environment, actions of existing and manifestations of new competitors;

- the competencies and values of personnel implementing strategic and operational approaches to business management are also different. That is why it is advisable to have strategic and operational functions (blocks) in the organizational structures of modern large companies [48].

The main goal of managing competitiveness at the strategic level is the formation of prerequisites for the effective use of the company's external competitive advantages and the creation of new ones for successful activity in the future. The main task of managing competitiveness at the operational level is to provide assistance to managers in achieving the planned goals, which are most often expressed in the form of quantitative planned development indicators, which provides the enterprise with a sustainable level of development. The tactical level of competitiveness management is mainly related to ensuring a high level of product competitiveness due to high quality, reasonable prices and operating costs, as well as effective marketing support.

A competitive enterprise in the short term is characterized by the following features:

- average rate of increase in revenue from the sale of profit;
- achievement of average regional profitability indicators;
- satisfaction of the demand of buyers in the main product groups is not lower than that of the nearest competitors;
- limited possibility of expanding the range of products, introduction of advanced production and information technologies due to lack of finances;
- by maintaining its market share throughout the year.

In the long term, the competitiveness of the enterprise is characterized by slightly different features, which include:

- the dynamics of growth of sales revenue and profitability of financial and economic activity became constant;
- availability of financial reserves for the sustainable development of the enterprise, improvement of working and living conditions of employees and their family members;

- compliance in terms of volume and structure of the range of products produced to purchasing demand in all consumer segments;

- optimal price-quality ratio;

- high level of human resources capacity;

- proper condition of the material and technical base of production, primarily fixed assets. It should be taken into account that the land used in the production of an agricultural enterprise involves the implementation of long-term use and restoration programs to ensure its constant fertility and greatest efficiency;

- high investment attractiveness and the possibility of implementing large investment projects at the expense of own and a wide range of long-term loan sources of financing [115].

Strategic management of the enterprise's competitiveness involves a wide range of tasks and problems related to the definition of the general goals of the enterprise and are affected by uncontrolled external factors. The subject of strategic management of the company's competitiveness is:

1. Problems that are directly related to the general goals of the enterprise, which work for the future and contribute to increasing the efficiency of activities by ensuring the interconnection of goals, resources and results. Therefore, decisions regarding the creation of new or liquidation of old production, development of new products, technology or new markets are strategic. As for decisions related to the saving of material, energy or labor resources, their purpose is to coordinate the current activities of the enterprise, therefore they are considered operational.

Tasks related to a certain type of enterprise activity, necessary to achieve long-term goals, but currently absent or available in insufficient volume. Such tasks relate to strategic problems in the development and production of new products, the purchase of new technological equipment for the enterprise, the invitation of new specialists, and the increase in production volumes.

Numerous external factors. In order not to make a mistake when choosing a strategy and direction of development, it is necessary to assess the degree of influence of economic, political, scientific and technical, social and other factors on the future of the enterprise. Continuous monitoring of the environment and concern for it is an essential condition for improving the efficiency and competitiveness of the agricultural enterprise, in view of the specific nature of its activities [24-25].

At the same time, strategic management in the process of its functioning has certain objective difficulties:

- does not give an accurate picture of the future state of the enterprise;
- cannot be reduced to a set of fairly clearly developed easy-to-implement procedures and schemes (compared to operational management);
- strategic management does not have a sufficiently developed theory or algorithm that would clearly explain what and how to do when solving specific tasks;
- incomparable to operational management, emotional stress, organizational efforts of managers engaged in strategic management;
- it is very difficult to assess with an acceptable level of reliability both the magnitude of the possible effect and the consequences of erroneous decisions of the owners and managers of an agricultural enterprise [13].

A similar position can be traced in the monograph of E. Novitsky "Problems of strategic management of diversified corporations", where he singles out a number of its problematic aspects and limitations. Thus, according to the scientist, strategic management "does not give an accurate and detailed picture of the future, it cannot be reduced to a set of routine procedures and schemes, it does not have precise orders for solving certain tasks in specific situations". A scientist compares strategic management more quickly to a certain philosophy or ideology of business, which requires enormous efforts and a large expenditure of time and resources, while dramatically increasing the negative consequences of strategic management errors. In the implementation of strategic

management, the scientist places the main emphasis on strategic planning, while an important component of strategic management is the implementation of the strategic plan [179].

It is necessary to separately clarify the nature of the agricultural enterprise regarding its “strategic”, that is, the availability of the necessary resources and opportunities for strategic management of its competitiveness. The development and implementation of a strategy, in particular a diversified enterprise, requires a significant expenditure of various resources. On the one hand, this allows most economic subjects to ask questions about strategy only in scholastic-theoretical terms, on the other hand, this is why big strategic mistakes occur. Not all enterprises are able to choose a strategically profitable market in the same way. Of great importance is the quality of management, its ability to combine resources strategically rationally, to combine them with a set of key competencies [179].

The most important characteristic of the poultry enterprise’s strategy is the ability to find a market niche suitable for the available resources and act in it. Strategic management is actively developing. Modern experts talk about two directions of its development:

Regular strategic management. Represents the logical development of strategic planning and includes two complementary subsystems – the strategy analysis and planning subsystem and the strategy implementation subsystem. The essence of this direction is the management of the strategic powers of the enterprise. The direction has been deeply and fully developed, in connection with which it has become widespread.

Real-time strategic management. It is connected with the solution of strategic tasks that unexpectedly arise. It is characteristic of the spheres of the economy, where the transformation of the external environment occurs often and unpredictably, in connection with which a quick and adequate reaction of the enterprise to the revision of the strategy is necessary. Therefore, the enterprise must constantly clarify the strategy and solve operational tasks [17].

In the context of the considered concepts of strategic management and quality management, until recently it could be argued that most enterprises, functioning in a fairly stable environment and being in an attractive industry niche, are able to form a specialized set of assets on a long-term basis (that is, focused on the Porter model of strategic behavior), investing quite a lot of money in ensuring their positions on the domestic and global markets.

However, today the competitive situation on domestic and international markets requires more complex strategic behavior. Experts are focusing more and more attention on the problems of diversification of activities, search for new competitive advantages. Today, various types of strategies are aimed at increasing and achieving the necessary level of competitiveness of agricultural enterprises. The peculiarity of the author's classification of such strategies is that the proposed strategies are aimed at maximizing profit in order to increase the competitiveness of the business entity. Classical models were taken as a basis, as they are of great importance in the analysis of the processes of the relationship between the enterprise and the market environment. The choice of strategy depends on the results of activity, analysis of the competitiveness of the enterprise, internal and external environment. In the process of developing strategic plans, it is possible to combine two or more strategies. To implement one or another strategy for increasing the competitiveness of an agricultural enterprise, tactics are developed (or a set of alternative options for actions aimed at increasing competitiveness, with the choice of the most optimal according to a certain criterion). It is necessary to determine the performance criterion and initial parameters for each strategy.

Let's consider strategies that belong to the static type of strategies for increasing competitiveness. The first, based on the development of the market, is that the enterprise seeks to increase the sale of manufactured products. The enterprise can enter new geographical markets; new market segments, the demand for which is not yet satisfied; use new sales methods, offer existing goods in a new way.

When choosing a strategy for increasing the competitiveness of an agricultural enterprise based on market development, models were developed based on selected optimization criteria. As an optimization criterion, we accept the maximization of the profit received by the enterprise from the sale of products:

$$P = \sum_{p=1}^n P_i(T_{si}, N_i) \rightarrow \max, \quad (5.1)$$

where  $P_i(T_{si}, N_i)$  – the profit received from the sale of products of the 1st type in the amount of  $N_i$  at the price of  $Q_i$ ;  $p$  – the total number of products sold by the enterprise.

Should be determined  $N_i$ , at which the value of the function (5.1) under the conditions of restrictions takes the maximum value. Restrictions can be:

(a) limitation of raw materials and production resources:

$$\sum_{i=1}^n \alpha_{ij} H_i \leq M_j; \quad j=1, t, \quad (5.2)$$

where  $\alpha_{ij}$  – the rate of consumption of the production resource  $j$  type;  $j=1, t$ ;  $t$  – the total number of types of raw materials and production resources used;  $M_j$  – available amount of resources  $j$  type at the enterprise;

(b) increasing the volume of product sales and expanding sales markets:

$$N'_{ik} + \Delta N_{ik} \leq N_{ik}; \quad k=1, K; \quad 0 \leq N_{ik}; \quad k_1=1, K_1; \quad (5.3)$$

$$N_i = \sum_{k=1}^K N_{ik} + \sum_{k=1}^{K_1} N_{ik1} \quad (5.4)$$

where  $N'_{ik}$ ,  $N_{ik}$  – sales  $i$  type of products on  $k$  the sales market is actual and planned, respectively;  $\Delta N_{ik}$  – planned increase in implementation volumes  $i$  type of products on  $k$  sales market;  $K$  – available number of sales markets;  $N_{ik1}$  – sales  $i$  виду products on the new  $k_{1-t}$  sales market;  $K_1$  – the total number of new sales markets that are planned to be mastered.

Thus, condition (5.4) is a condition for the need to develop new sales markets. At the same time, the volume of sales of  $N$  products in conventional units of measurement should strive to the maximum:

$$N = \sum_{i=1}^n N_i(C_i, S_i) \rightarrow \max \quad (5.5)$$

where  $S_i$  – unit production rgani type of product.

While limiting:

$$P'_i \leq P_i; \quad (5.6)$$

where  $P'_i$  and  $P_i$  - profit from the sale of  $i$  types of products, respectively, actual and planned:

$$P_i = \sum_{i=1}^p [\sum_{k=1}^k N_{ik} C_i + \sum_{l=1}^k N_{il} C_i - N_i S_i] \quad (5.7)$$

The efficiency of an agricultural enterprise with this strategy increases due to the increase in the values of the generalizing indicators of the target functions (5.1) and (5.5).

A strategy for increasing the efficiency of the business entity, which is based on cost advantages. An entrepreneurial structure that focuses on a certain market share held in the industry creates products in accordance with the planned demand. When production volumes increase, the company can minimize specific costs and offer low prices. This provides an opportunity to receive a higher share of profit compared to competitors, better respond to cost growth and attract consumers who focus on the price level. When choosing a strategy for increasing efficiency, which is based on cost advantages, product production costs are accepted as an optimization criterion. It is necessary to determine  $S$  the cost price at which the function, under certain restrictions, takes the minimum value:

$$S = \sum_{i=1}^p S_i(C_i, N_i) \rightarrow \min \quad (5.8)$$

Restrictions are (5.2) and (5.6).

Access to new sales markets in this case is not considered, so the profit is determined:

$$P = \sum_{i=1}^p C_i, N_i - \sum_{i=1}^p S_i N_i \rightarrow \max \quad (5.9)$$

At the same time, the volume of sales of  $N$  products in conventional units of measurement:

$$N = \sum_{i=1}^p N_i(S_i, C_i) \rightarrow \max \quad (5.10)$$

The limitation is also:

$$S'_i \geq S_i; C'_i \geq C_i \quad (5.11)$$

where  $C'_i, C_i$  - actual and planned price  $i$  type of product,  $S'_i, S_i$  - actual and planned cost of production of a unit of the 1st type of products.

The efficiency of the enterprise when choosing this strategy will increase due to the increase in the general indicators of the three blocks (target functions: 5.8 and 5.10).

The strategy of increasing the efficiency of an agricultural enterprise, which is based on concentration, is based on the fact that the business entity singles out a specific market segment of this industry due to low prices (that is, for a larger number of consumers) or a unique offer. The enterprise can control costs by concentrating efforts on several main types of products, which are provided for a certain segment of the relevant consumers. When choosing a strategy for increasing the efficiency of an agricultural enterprise, which is based on concentration, the profit received from the sale of products is taken as an optimization criterion:

$$P = \sum_{i=1}^p P_i(C_i, N_i) \longrightarrow \max \quad (5.12)$$

Values must be determined  $N_i$ , in which the function (5.12) takes the maximum value under a number of restrictions. When defining the system, it is necessary to consider two possible options:

- the company focuses on a specific segment of the market, in which, due to low prices for products, it has a greater demand;
- the enterprise, due to the uniqueness of its products in the industry, has some clearly defined sales market (authenticity).

When choosing the first option, the restrictions are (5.2-5.4), as well as price restrictions.

$$C'_i \geq C_i \quad (5.13)$$

where  $C'_i$ ,  $C_i$  – actual and planned price  $i$  type of product.

When choosing the second option, the limitations are (5.2-5.3). At the same time, additional restrictions on the number of species are considered  $i$  the range of products being created, that is, it is necessary to choose such an assortment  $i=1, p_0$  (where,  $p_0$  – number of types of unique products), which is unique. Determination of the uniqueness of products is carried out in accordance with the formula (5.14):

$$P_{iq} \rightarrow 0; i=1, Q \quad (5.14)$$

where  $P_{iq}$  – probability of appearance of products  $i$  manufacturer's type  $q$ , that is, a competitor in the production of products  $i$  type;  $Q$  – number of competitors from the release  $i$  type of product.

The competitiveness of the enterprise is determined by which strategy it chooses.

Strategies that belong to the dynamic type of strategies for increasing the efficiency of the enterprise are as follows. The strategy of increasing the competitiveness of the business entity, which is based on the development of new products, is effective in the case when the enterprise produces products at the stage of reducing the life cycle, when the level of demand among consumers decreases. In this case, the company develops updated or modified products for existing markets. Emphasis is placed on new types of products, quality improvement, innovations closely related to already implemented types of products, and they are sold to consumers who are positively disposed to this enterprise. When the values of quality characteristics increase, the competitiveness of products increases, and accordingly, the competitiveness of the enterprise increases. Introduction of new technologies into production, emergence of new sales markets for updated products, increase in the level of marketing research, increase in financial indicators, etc. – these are the results of the implementation of the strategy of increasing efficiency, which is based on differentiation. As a rule, traditional sales methods are used, when promoting products, attention is focused on the fact that new products are produced by well-known enterprises and which have proven themselves positively on the market.

The peculiarity of the proposed strategies for increasing the efficiency of poultry enterprises is that all of them are aimed at simultaneously increasing the volume of production and sales of products, increasing profits, as well as increasing the competitiveness of enterprises on the market. At the same time, it is necessary to take into account a number of specific aspects:

First, for the development of poultry enterprises and increasing their competitiveness, it is advisable to apply a systematic approach that ensures the stability of the activities of economic entities. This involves the implementation of comprehensive measures in the field of management of production processes, logistics, technological support and product quality. Particular attention should be paid to the management of crisis phenomena which may arise from fluctuations in feed prices, epizootics, changes in demand for products, and from technical and organisational deficiencies directly affecting the assessment of the efficiency and competitiveness of poultry enterprises [52].

Secondly, poultry enterprises have been affected in recent years by the increasing variability of business conditions: changes in climatic conditions, fluctuations in the cost of resources, unpredictability of demand and regulatory requirements. This complicates the task of timely adaptation of enterprises to changes in the external environment. Accordingly, management doctrine should be to ensure that the speed and complexity of management decision-making correspond as much as possible to the dynamics of changes in external conditions. For poultry enterprises, this means prompt adjustment of production plans, optimization of resources, flexible formation of price policy and quick response to market fluctuations, which ensures sustainable functioning and improvement of activity efficiency.

Thirdly, economic, organizational and technological levers of management should be combined in strategies to improve the efficiency of poultry enterprises. This includes the introduction of modern technologies for feeding and keeping poultry, automation of production processes, development of infrastructure for storage and sale of products, as well as stimulation of personnel work through a system of motivation, bonuses and material incentives. Such a comprehensive approach ensures not only an increase in production volumes and profit, but also the sustainable formation of competitive advantages in the market of poultry products.

Thus, successful improvement of the efficiency of poultry enterprises is possible only if systemic, adaptive and comprehensive strategies are applied, which ensure the synergy of economic, organizational and technological factors, as well as the ability to quickly respond to changes in the internal and external environment.

Strengthening competition in the market of producers of livestock products, in particular poultry, requires the implementation of strategic management of the competitiveness of enterprises, the essence of which is multifaceted and involves the rational use of available resources and the formation of promising competitive advantages. In the field of poultry farming, strategic management should ensure the achievement of long-term goals of the enterprise, such as increasing the volume of production and sale of products, increasing profits, improving the quality of products and ensuring a stable position in the market.

Для ефективного підвищення конкурентоспроможності птахівничих підприємств стратегічне управління має мати комплексний, системний характер і включати вирішення низки науково-практичних завдань:

- formation of the concept of strategic management of the competitiveness of the enterprise as a complex object of diagnosis, evaluation and forecasting. This involves determining the key directions of development, determining competitive advantages, analyzing the current state of the market, as well as assessing the impact of regional and sectoral factors on the company's activities;

- development of a toolkit for assessing one's own competitive advantages, which includes the use of a system of economic efficiency indicators that take into account technological, organizational, economic, social and environmental aspects of the production of poultry products. Such an assessment allows you to determine the strengths and weaknesses of the enterprise in comparison with competitors;

- improvement of the technology of managing the competitiveness of enterprises, which includes determining the content of management functions,

development of personnel motivation systems, implementation of modern feeding technologies, keeping and reproduction of livestock, automation of production processes and measures to control product quality;

- definition of change management methods at the enterprise, which ensure quick adaptation to innovations in technologies, market conditions and legislative regulation. For poultry enterprises, this means prompt response to changes in feed prices, climatic conditions, demand for products and the development of new market segments;

- the organization of the process of formation and implementation of the competitiveness management strategy during the modernization of the enterprise, which involves the complex interaction of economic, organizational and technological levers of management. The implementation of the strategy allows not only to increase production volumes and profitability, but also ensures the long-term stability of the enterprise on the market, forms competitive advantages and contributes to increasing the efficiency of poultry production.

Thus, the strategic management of the competitiveness of the poultry enterprise is a key tool for increasing economic efficiency, as it ensures the comprehensive and systematic implementation of management solutions adapted to market dynamics and consumer needs.

Strategic tasks to achieve and maintain the necessary level of competitiveness of poultry enterprises should be reflected in a number of key aspects:

- geographical aspect – involves maintaining and strengthening positions in existing competitive markets, ensuring the necessary level of profitability of sales, as well as planned expansion of activities to new regional and international markets for the sale of poultry products;

- the resource aspect – includes maintaining optimal stocks of fodder, material and technical resources and poultry livestock, sufficient to fulfill the

planned production tasks and fulfill contractual obligations to partners and consumers;

- the technological aspect – involves providing conditions for the rapid adaptation and implementation of the latest technologies in the production, feeding, maintenance and processing of poultry products, as well as the modernization of business processes in the event of economically justified innovations;

- the organisational aspect – aims to improve the organisational structure and subsystems of enterprise management, develop corporate governance and ensure effective interaction with all stakeholders, including suppliers, consumers and public authorities.

- environmental and social aspects – involve business development taking into account the preservation of the environment, caring for natural resources, as well as promoting the socio-economic development of the region and increasing the well-being of workers.

Thus, solving these tasks during the development and introduction of strategic management involves the presence of five main elements in it:

*First element: system simulation of the situation.* This element involves the ability of the enterprise management system to perceive, analyze and evaluate patterns of interaction between key market factors and the internal capabilities of the enterprise. For poultry enterprises, this includes: analysis of market needs and demand for various types of poultry products (eggs, poultry meat, fertilizers and related products); assessment of competitors' activities and comparison of the quality of their products with their own standards; forecasting the impact of external factors (changes in feed prices, fluctuations in demand, climatic and epizootic risks) on production and economic indicators; coordination of the company's strategic goals with its financial, production and human resources.

The complexity and multivariability of changes in real market conditions greatly complicates the strategy modeling process. Therefore, it is critical to

create various abstract scenarios as close as possible to real conditions that allow assessing potential risks and opportunities. System modeling ensures the formation of a relationship between the directions of the enterprise's development, its strategic goals and ways to achieve them, and also takes into account economic opportunities and limitations. Choosing a certain strategy in poultry farming means not only the optimal distribution of available resources, but also the creation of additional potential: investments in poultry keeping and feeding technologies, modernization of infrastructure, development of logistics and sales systems. In modern conditions of a market economy, this function of the strategy acquires special importance, as it allows the enterprise to quickly respond to changes in demand, increase the efficiency of resource use and form competitive advantages based on accurate analysis of market and internal data.

*Second element: determining the need for change.* In the conditions of the modern competitive market, poultry enterprises are forced to constantly analyze their activities and determine the need for changes in production, organizational and economic processes. The competitive environment requires intensification of actions in several key directions: implementation of modern poultry feeding and keeping systems, automation of production processes, improvement of keeping conditions to increase productivity and reduce the cost of production; optimization of the management structure, clear distribution of functions between divisions, implementation of modern product quality control systems, improvement of logistics and sales systems; optimization of feed costs, energy resources and maintenance, effective use of labor and material resources, planning of financial flows and investments in enterprise modernization.

The need for changes is determined by a variety of variable factors, including: the efficiency of production costs and the level of profitability of certain types of products; differentiation of products by types, quality and consumer properties, which affects competitiveness; product quality and its compliance with modern standards and consumer requirements; the company's

ability to manage risks associated with epizootic threats, fluctuations in feed and product prices, changes in demand and climatic conditions.

Thus, the process of determining the need for change is critical for improving the economic efficiency of poultry enterprises, as it allows timely adaptation of production and management activities to changes in the external environment, reduce costs, increase labor productivity and ensure sustainable positioning in the market.

*Third element: strategy development.* In the process of creating a system of strategic management of a poultry enterprise, it is extremely important to take into account that the strategy should be formed on the basis of a comprehensive analysis of production, economic, technological and market conditions of activity. All combinations of solutions embedded in the expert system of choosing a strategy should ensure an increase in the competitiveness of the enterprise due to the optimal use of the existing economic potential and the creation of new competitive advantages.

The need for changes, determined at the previous stage, becomes the basis for modeling the strategy, which is aimed at improving the results of the production and economic activity of the enterprise. In the case of poultry enterprises, the strategy provides: optimization of production processes – modernization of poultry keeping and feeding lines, implementation of automated animal health and productivity control systems; product quality assurance – formation of quality standards, implementation of certification and control systems at all stages of the production cycle, increasing product compliance with market and consumer requirements; increasing economic efficiency – optimization of costs for feed, energy and labor resources, planning of financial flows, increasing the profitability of production; development of competitive advantages – differentiation of products by quality and assortment, introduction of innovations, development of the brand and sales system that ensure access to new markets; sustainable development of the enterprise –

taking into account environmental, social and regional factors that ensure long-term stability of activity.

The strategy is developed as a set of goals and ways to achieve them, which integrates managerial, economic and organizational principles. It provides for decision-making rules, implementation control and flexible adaptation to changes in the external environment, which makes it an effective tool for increasing the economic efficiency and competitiveness of poultry enterprises.

*Четвертий елемент: вміння використовувати елементи новизни в системі стратегічного аналізу.* In the modern conditions of the development of the agricultural sector, when the external environment is characterized by high variability, technological leaps and increased competition, the ability of the enterprise to introduce elements of novelty into the system of strategic analysis acquires key importance. For poultry enterprises, this is especially relevant, as the industry is distinguished by the speed of technological change, high dependence on innovations in genetic programs, feeding, veterinary medicine, logistics and methods of product processing.

The use of novelty elements in strategic analysis involves not only the application of modern methods and approaches, but also the creation of conditions for systematic updating of strategic information, increasing the accuracy of forecasts and timely adjustment of management decisions. In the structure of the mechanisms for the formation of the economic efficiency of the enterprise, this element plays the role of an intelligent platform that ensures: identification of new opportunities to increase productivity and reduce costs; prompt response to changes in the market situation, including fluctuations in demand for poultry meat; adaptation of production programs to modern technologies that increase product output and quality; formation of innovative competitive advantages that are more stable and more difficult to reproduce for competitors. Examples of the application of novelty in the strategic analysis of poultry enterprises:

- integration of digital technologies into production analysis.

The use of IoT sensors for microclimate control, automated poultry weighing systems, feed consumption monitoring allow you to predict productivity and optimize costs with high accuracy;

- use of optimization models (in particular, Solver in Excel). As shown in previous calculations, the use of optimization models makes it possible to determine the most profitable structure of poultry meat production and processing, taking into account minimum and maximum demand;

- introduction of modern market analysis methods. The use of methods of competitive benchmarking, portfolio analysis, analysis of product demand development scenarios allows more efficient positioning of products on the market;

- innovative approaches to quality management. HACCP systems, automated product identification systems, digital control of production batches increase consumer confidence and form a sustainable reputation advantage;

- environmental and energy-saving technologies. The use of new ventilation systems, renewable energy, and improved bedding materials allows you to simultaneously increase efficiency and ensure compliance with environmental requirements.

The ability to use new approaches in strategic analysis provides the basis for progressive development of production potential and ensures more optimal use of resources. For poultry enterprises, this means: an increase in average daily growth and a decrease in the decline of poultry; reduction of feed costs by 1 kg of growth; reduction of the production cycle; increasing the output of high-quality products; increasing the profitability of production; strengthening the market stability of the enterprise. Thus, the application of elements of novelty in strategic analysis becomes not just a tool for improving management, but one of the key factors in the formation of the economic efficiency of poultry enterprises, which ensures their ability to quickly adapt, technological development and strengthen competitive positions in dynamic market conditions.

*The fifth element: the possibility of implementing the selected strategy, which involves the development of a clearly structured system of strategic management and planning, which provides for the possibility of analyzing various options in dynamics.*

The strategy of increasing competitiveness, which is chosen by the business entity, should, on the one hand, reflect the methodology of planning and implementing the set goals and, on the other hand, answer the question of where and how the enterprise should function. The process of strategy formation and its implementation has a cyclical iterative nature due to existing uncertainty and constantly changing external conditions, which requires constant adjustments. This actualizes the provision of the strategic competitiveness management model with a feedback mechanism and the integration of the control process into the strategy implementation processes. The strategy is evaluated in the form of a comparison of the results of the work with the goals. The evaluation procedure and the results of compliance or non-compliance trigger a feedback mechanism to adjust the strategy. Medium-term development programs at the level of strategic business units of an agricultural enterprise must be reviewed and adjusted in case of significant changes in the external and internal environment, as a result of which it becomes impossible to achieve the planned indicators. At the same time, evaluation and adjustment must be carried out systematically and continuously, covering all levels of strategy implementation. In some exceptional cases, adjustments may be made to the mission and objectives of the enterprise.

The main features of an agricultural enterprise, which must be taken into account when forming and implementing strategic management, include the following.

Strategic significance of products. The agricultural enterprise produces food products for the population and raw materials for the processing industry. This gives the industry strategic importance for the country's economy, which

imposes a special responsibility on enterprises in ensuring stable and efficient production, in particular in the poultry segment.

The social role of the enterprise. Agriculture is not only a branch of the economy, but also the territory of residence of a large part of the population. Enterprises influence the socio-economic development of regions, create jobs, shape social infrastructure and influence the level of employment. This requires taking into account social aspects when making strategic decisions.

Dependence on natural and climatic factors. The production process in the agricultural sector, in particular in poultry farming, depends to a large extent on climatic conditions, the state of the fodder base and other natural factors. The lack of a direct relationship between the amount of resources used and the volume of products obtained necessitates flexible planning and adaptive management of production processes.

Seasonality of production. The characteristic uneven use of resources during the year, seasonal fluctuations in production volumes and fund receipts impose additional requirements on financial planning, logistics and inventory management. Strategic management should take into account these cyclical features to ensure stable enterprise activity.

High competition among commodity producers. The large number of scattered agricultural enterprises creates increased competition in the market of agricultural products. To achieve high economic efficiency and competitiveness, poultry enterprises must form and use their own competitive advantages, in particular through innovation, improvement of product quality and optimization of production processes.

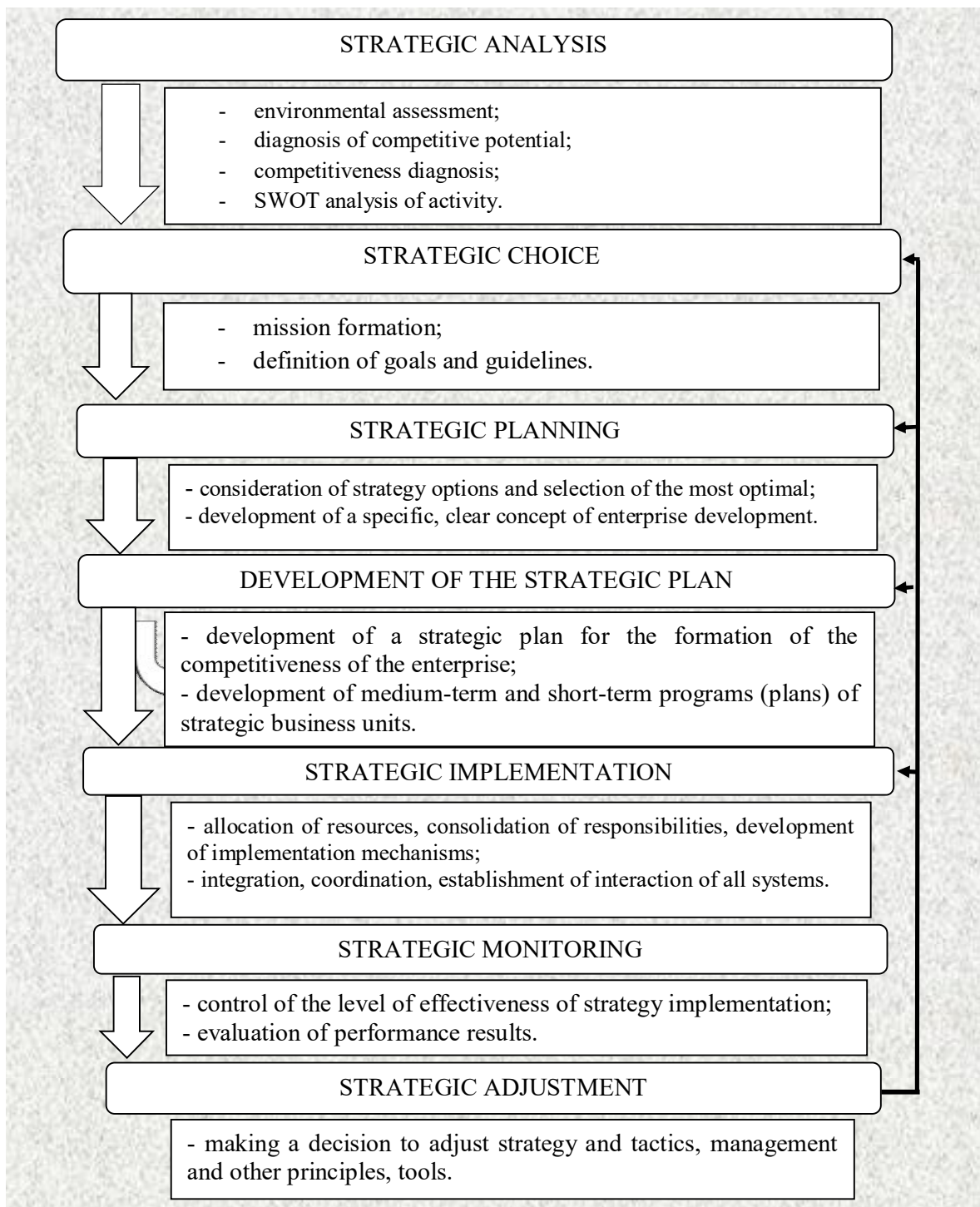
Price inelasticity of demand. Demand for agricultural products is relatively inelastic, implying limited consumer sensitivity to price changes. This requires enterprises to pay attention to product quality, marketing strategies and brand management, as well as to increasing economic efficiency and optimizing costs.

Taking into account the above, we proposed the concept of strategic management of the competitiveness of a poultry enterprise, the essence of which is the need to implement a complex dynamic management process on the terms of continuity and multifacetedness through active managerial influence on the system of strategic management of a poultry enterprise to achieve the set goals, a high level of competitiveness and long-term competitive advantages taking into account internal and external factors with the help of a set of interrelated and interdependent elements of the organizational structure, methods, business processes, potential, resources, capabilities and tools, meeting the requirements of all interested parties and constant improvement of activities, effective feedback, timely response to existing and potential changes in the operating environment.

Algorithm of strategic management of enterprise competitiveness (Fig. 3.7), aimed at poultry enterprises, includes seven stages.

I stage: strategic analysis of the competitiveness of the enterprise – the informational basis of the process of strategic management, goal setting and strategy development in the form of pre-planned studies based on a systematic analysis of various factors that are determined by the external business environment and internal capabilities, potential and resources of the enterprise, which is carried out with the aim of determining the current state of the competitive environment, the competitiveness of the enterprise itself and the possibility of its further effective development.

II stage: strategic choice – formation of the enterprise's mission and determination of long-term goals of formation of the enterprise's competitiveness. The vision of its prospects by the owners and managers of the enterprise is of decisive importance at this stage. At the same time, an important condition for the effectiveness of this process is their conviction in the need for strategic management and its significance;



**Fig. 3.7. Scientific and methodological algorithm for the formation of the concept of strategic management of the competitiveness of an agricultural enterprise**

Source: own research.

III stage: strategic planning – offering alternative options for strategies and choosing the most optimal one, developing a strategy for ensuring the competitiveness of the enterprise. When studying strategic alternatives,

managers should analyze possible development options and choose the most optimal one from them to achieve the set goal (for example, the development and implementation of a model of strategic management of enterprises, which is based on the implementation of functional competitive strategies, takes into account the challenges of a globalized environment and is adapted to national business conditions, should ensure the active formation of competitive advantages, strengthening their market positions and, with the help of the implementation of the principle of complexity, form the so-called buffer zone of the enterprise.

The creation of such a zone will make it possible to increase the terms of strategic reorientation of the enterprise to develop a set of new management tactical and strategic goals, as well as to slow down the negative manifestations of the external environment). Having decided on a strategic alternative, management must choose an appropriate specific strategy. For this, a specific, clear concept of enterprise development in the future should be developed;

IV stage: development of a strategic plan for the formation of the enterprise's competitiveness – planning (actions regarding risks and opportunities, planning of changes), transformation of the enterprise's strategic goals into medium- and short-term programs (plans) of strategic business units;

stage V-VI: implementation of the strategy of ensuring the competitiveness of the enterprise and strategic control – characterized by the need for optimal distribution of the strategic goals of the enterprise by strategic business units:

- there is a distribution of resources, consolidation of responsibility, development of mechanisms for the implementation of medium-term and short-term development programs,

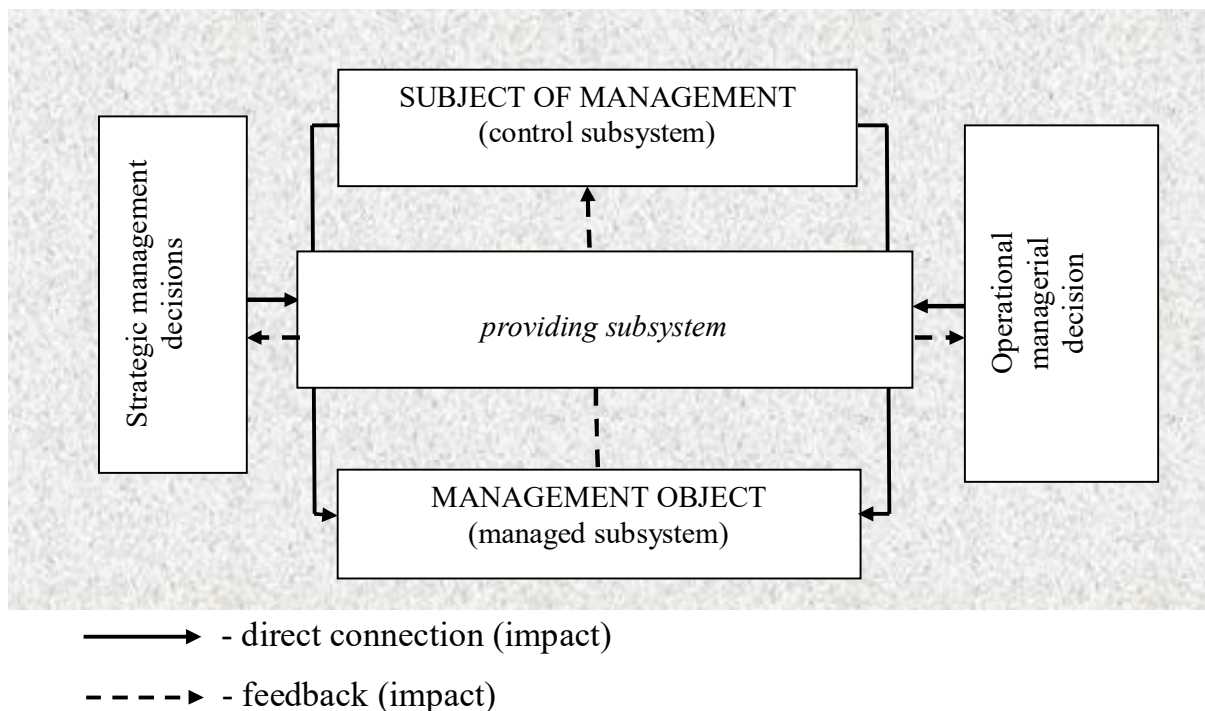
- integration, coordination and interaction of strategic and operational management systems and other enterprise systems is ensured;

Stage VI: strategic monitoring – control of the level of effectiveness of strategy implementation, evaluation of activity results (monitoring,

measurement, analysis and evaluation, internal audit, management analysis). An effective control system based on a balanced system of criteria for analyzing the results of activities.

stage VII: adjustment – involves evaluating the result of the comparison and making a decision about the need to adjust the methods and means of implementing the strategy or adjusting the strategy itself, plans. Deficiencies in the strategic management system are being addressed by returning to the planning stage to review strategic targets after repeated strategic analysis. Previously established development indicators are being adjusted. An existing strategy is being adjusted or a new one is being developed.

At the same time, it should be noted that each of the strategic management systems is, first of all, a subsystem of the enterprise management system, which is designed to carry out an effective process of substantiation, adoption and implementation of competitive strategic and operational management decisions (Fig. 3.8).



**Fig. 3.8. The general structure of the system of strategic management of the competitiveness of an agricultural enterprise**

Source: own research.

A mandatory condition for the functioning of such a system is the presence, in addition to direct and feedback communication between all existing subsystems. Taking into account the mechanisms of the formation of the strategic management system of the enterprise proposed by various researchers, the formation of the strategic management system of competitiveness, the following subsystems must be distinguished:

- managing – includes determining the goals, functions, methods and structure of managing the competitiveness of the enterprise. At the same time, management goals are divided by time (strategic, tactical, operational) by functional feature and according to the level of priority. The definition of the functions of the management subsystem is the selection of a set of planning, organization, motivation, interaction, accounting and control processes necessary in the management process. Control subsystem methods include an interconnected set of existing management methods aimed at achieving enterprise competitiveness.

The structures of the management subsystem determine the organizational structure and management structure of the enterprise, corresponding to the three structure-forming levels of the enterprise, with the corresponding tasks, functions, mechanisms and tools:

- higher level – the level of the company's management, which is responsible for forming the company's mission and determining the long-term goals of forming the company's competitiveness, developing a strategy for ensuring the company's competitiveness;

- middle level (level of functional zones of the enterprise) – responsible for the implementation of the model of strategic management of agricultural enterprises, development of functional competitive strategies;

- primary level (level of business units (business units) of the enterprise) – responsible for the implementation and implementation of the strategy;

- managed – consists of the elements “marketing”, “finance”, “internal processes”, “development”, etc. and is a set of objects of influence of the

management subsystem using the provision subsystem and has the greatest influence on ensuring the competitiveness of the enterprise. The subsystem of the internal microenvironment is a reflection of the interaction of the control and controlled subsystems. Its competitiveness is achieved by balanced and targeted actions of the above subsystems;

- providing – consists of informational, resource, methodological, legal, environmental and other components, as well as necessary to ensure the high-quality and full functioning of the internal microenvironment of the enterprise.

As a result, the algorithm proposed by us is a stable consistent relationship between the economic and management categories “business process of the enterprise” – “synergism of the business process” – “competitive potential” – “competitive advantages” – “competitiveness of the enterprise”. Our proposed concept of strategic management of the competitiveness of an agricultural enterprise compared to others has the following advantages:

- combines complex and systematic approaches to the construction of the enterprise’s activities, with the help of which the goals of the enterprise’s development are determined on the basis of the existing resources and capabilities of the enterprise, their priority;

- the system is a set of dynamic interconnected and coordinated management processes;

- creation of prerequisites for increasing the strategic competitiveness of the enterprise through the initialization of the entrepreneurial strategic position and entrepreneurial orientation in the management process (including the component of innovativeness /proactivity), which is quite important in conditions of an unfavorable or dynamic external environment;

- identification and understanding of complex causal components that determine the influence of internal and external conditions of the enterprise on the purpose and properties of the formed competitive strategy to reduce the consequences of uncertainty and eliminate potential risks due to the use of SWOT analysis;

- formation and forecasting of quantitative values of the key indicators defined by us, which have a direct and indirect impact on the competitiveness of agricultural enterprises and allow monitoring of the implementation of the strategy;

- making constant changes to ensure the greatest effectiveness of strategy implementation;

- the use of advanced methods of analyzing the competitive advantages of the enterprise, developed and tested on the basis of taxonomic analysis and using the elasticity model of the methodology for assessing the efficiency of the use of the enterprise's resources, a general indicator of the level of development of the enterprise's competitive potential;

- relies on long-term competitiveness factors and focuses on radical actions of business entities;

- forms the framework conditions for planned and long-term activities related to the minimization of the attack zone by competitors, the search for vulnerable zones of competitors and effective ways of influencing them, the identification of effective channels for avoiding a direct collision with competitors based on the development of a new product or business model;

- balance and coherence of the strategic management system of the enterprise's competitiveness.

Among the system properties characterizing the concept of strategic management of the enterprise's competitiveness developed by us, the following should be highlighted:

- emergent (formation of properties in the system that are not characteristic of its individual elements);

- equipotentiality (the system has its own structure and at the same time is a subsystem of a higher-level system);

- synergism (the efficiency of the functioning of the system is higher than the total efficiency of the isolated functioning of its elements);

- homeostaticity (the ability to function for a long time without a significant decrease in efficiency).

It should also be noted that an agricultural enterprise will be able to achieve significant success and carry out effective activities in the modern economic environment only if the concept of the system of strategic management of the competitiveness of an agricultural enterprise meets certain requirements:

Transparency, that is, the ability of the company's management to have complete and reliable information about the current state of affairs in the company and in the external environment.

Analytics – the ability of the company's management to analyze all cause-and-effect relationships, draw conclusions and make economically justified management decisions based on them.

The effectiveness of horizontal and vertical communications, allowing the transmission of strategically important information within and between the different levels of the hierarchy in the enterprise.

A competent and knowledge-oriented approach to the management system involves the ability of the company's management to competently determine the need and ability to use various modern tools for the effective formation and implementation of strategic management of the competitiveness of an agricultural enterprise.

Manageability and effective distribution of powers and responsibilities within the enterprise, which allows effective use of the advantages of centralization of some management functions and decentralization of others.

Compliance with generally accepted requirements, norms and standards determined by both legislation and international and domestic standards.

Separately, it is necessary to highlight a number of typical mistakes that must be avoided in the process of strategic competitiveness management in order to obtain the best result from its implementation. Based on the results of research and generalization of the practical experience of domestic and foreign

entrepreneurs, a survey of owners and managers of domestic agricultural enterprises located in the Dnipro region, the following typical and most common mistakes, assumptions and beliefs were determined:

- efforts by senior management to keep a distance from the creation and execution of strategic planning by delegating these functions to a specific official or unit. If the strategy is not handled by the first person, then no one does it;

- the refusal of the company's management from strategic planning due to the fact that the implementation of the system was defeated in the past, that is, it did not lead to the results that the representatives of the highest level of management expected to receive;

- management's erroneous orientation on short-term incomes, without adequate accounting of the company's development prospects, given that strategic prospects are more difficult to predict due to the greater uncertainty of several areas of development and the need to account for both systematic and non-systematic factors, which ultimately leads to their underestimation and significant potential risks in the long term;

- the erroneous assumption of the owners and management of the enterprise that strategic planning will require too much financial and time costs;

- mistaken belief that little effort is enough to produce fantastic results;

- the assumption that direct copying of the successful experience of other companies without any changes is enough to achieve similar positive results;

- the assumption that the strategic planning system can be implemented without overestimating existing management technologies, management decision-making and control systems. The strategic planning system is a powerful weapon in the fight against organizational chaos. A manager who dares to implement it must be ready to change himself, his work methods, first of all. Only then will the system be effective. Strategic plan measures should ideally match in importance with operational issues;

- inability to find a person or group of people at the highest level of management who will be the “driver” of the project;

- lack of basic knowledge of project participants in the field of change management skills and technical knowledge to see the development perspective, as well as lack of personal qualities necessary to bring the project to an end;

- rejection of the calculation that planning is a political, social and organizational reformation of the company, but at the same time is a rigid structured process;

- the assumption that strategic planning is a process separate from operational activities. An error in contrasting the processes of planning and implementing the plan of everyday activities. The reason is the misunderstanding that the strategic plan should be the basis of the operational activity of the enterprise;

- the assumption that the upper and middle levels of management understand the essence of the strategic planning procedure, and that this procedure will always coincide with their personal interests;

- failure to understand that strategic planning is a symbiosis of rigid procedures and complementary intuition. Assumption that a hired group of third-party consultants or a specially created department will be able to independently develop a strategic plan for line managers of the enterprise;

- ignoring that the strategic plan is a process of learning about the external environment and the internal state of the enterprise, that is, a learning process combined with application;

- erroneous assumption that strategic planning will immediately pull the enterprise out of a state of crisis;

- the assumption that strategic planning is a tool for determining the perspective of a specific product or modifying an existing product. In other words, the non-acceptance of the strategic planning system as an integrated management system.

Thus, the introduction of the process of strategic management of the competitiveness of an agricultural enterprise in accordance with the concept and algorithm presented above will ensure comprehensiveness in solving the problem of forming the competitiveness of the enterprise, increase the level of reasonableness and logic of the adopted strategic decisions. In the conditions of globalization transformations, it is important to strengthen competitiveness in all types of economic activity, which enables the enterprise to change direction in a timely manner and correlate its strategic set in accordance with the new operating conditions. There is a direct dependence and inseparable relationship between the level of adaptation of agricultural enterprises and competitiveness, which leads to their quick and more effective adaptation to changes in the external environment and conditions of globalization, and vice versa, the development of globalization processes makes it possible to maintain the necessary competitive level of the enterprise.

Effective strategic management of the competitiveness of the poultry enterprise leads to the maximization of the positive effect of its management. The presence of this strategy serves as a significant factor in increasing the competitiveness of the enterprise, because enterprises that seek to maintain their competitiveness in the future are forced to coordinate their current and prospective interests, resources, opportunities, etc. It is impossible to solve only current, operational problems. Policies for effective sustainable development should be developed. Only the strategic management of the competitiveness of the enterprise gives priority to the effective interaction of the enterprise with the external environment and the achievement on this basis of sustainable competitive advantages over a long period. The victory of the enterprise in the competition should not be one-time, not accidental, but as a natural result of the strategic management of its competitiveness, constant and competent efforts of the enterprise's management.

## CONCLUSIONS

The monograph provides a theoretical generalization and scientific substantiation of the theoretical and methodological foundations of strategic directions for increasing the economic efficiency and competitiveness of poultry enterprises, including poultry meat processing enterprises. The results of the study made it possible to substantiate the conclusions and provisions in accordance with the goal.

The theoretical generalizations obtained as a result of the research, empirical confirmation of their reliability and modeling of the development of the process made it possible to substantiate the recommendations of a theoretical, methodological and applied nature regarding increasing the economic efficiency and competitiveness of poultry enterprises, namely:

Generalizations of the modern paradigm of the theory of economic efficiency confirm that in the theoretical and methodological aspect, the economic efficiency of poultry farming is manifested in the increase in the production of high-quality poultry products and the maximization of the profit from its sale per head of poultry while reducing labor, material and financial costs for the production of each unit of production, taking into account the interaction of internal and external factors of production. The analysis of existing scientific research allows us to assert that efficiency is not only an economic, but also a management category that must be used to evaluate various aspects of the enterprise's activity. It can change both under the influence of cost management and the achievement of strategic goals, and as a result of the action of a number of objective factors: changes in the priorities of values and needs of buyers. Therefore, it is advisable to consider cost management tools and methods as internal factors of ensuring production efficiency, and buyer needs as external factors affecting its efficiency.

Systematization of theoretical approaches to the identification of the stages of evolution of the term "efficiency" taking into account the provisions of

classical economic theory, management theory, welfare theory, organizational theory, resource dependence theory and efficiency theory made it possible to prove its multifaceted nature and to distinguish the types of efficiency characteristic of each stage (economic, target, Pareto-efficiency, internal, external, necessary) and categories comparable to the concept of efficiency (effectiveness, reliability, optimality, rationality and level of satisfaction of needs).

The theoretical and methodological approach to the formation of the economic efficiency of poultry enterprises is based on: system analysis, which is a method of assessing the structural connections of the system based on a combination of statistical and economic-mathematical methods and researching the influence of the main factors on the efficiency of the functioning of enterprises; finding out the optimal levels of input resources; assessment of the economic efficiency of enterprises based on modeling and development of integral indicators, the use of which will allow conducting adequate comparisons determine industry ratings of enterprises and carry out a comprehensive assessment of the efficiency of enterprises.

The study of the current state, development trends and the level of economic efficiency of poultry enterprises in the Dnipropetrovsk region shows an increase in the production indicators of gross poultry production. Thus, during the period under investigation, enterprises increased the volume of meat production by 5.1% and eggs by 2.1%, and the profit obtained from sales increased by 2.5 times. This was facilitated by intensive farming, namely a reduction in feed costs by 2.8% and an increase in the productivity of laying hens by 3.2%. The level of profitability in the production of eggs is on average 32.7% and poultry meat -14.9%. Meat sales indicators show that this type of activity is unprofitable.

The grouping of poultry enterprises of the Dnipropetrovsk region revealed a positive impact of the concentration of production on indicators of the economic efficiency of poultry meat production. It was established that

enterprises that had an average annual poultry population of less than 500,000 heads, the production cost of poultry production was almost 1.6 times higher compared to the production cost of poultry production in enterprises that had an average annual poultry population of more than 600,000 heads. In terms of the cost of 1 ton of production, almost half of the enterprises, which is about 45% of the total number, turned out to be unprofitable. The main reason for the unprofitability of poultry meat production in these enterprises was the low level of poultry productivity (annual production per head was less than 3 kg) with fairly high production costs per head of poultry. The main directions of the development of poultry farming should be: the formation of new and revival of former specialized complexes for the production of poultry products on an industrial basis, more complete use of the genetic potential of crosses and poultry breeds, rational organization of work and production, introduction of resource-saving technologies for the production of products; deepening the processing of poultry raw materials, expanding the assortment and improving the quality of products; mastering modern methods of marketing, sales, advertising.

One of the most important indicators that affects the efficiency of the studied enterprises is poultry productivity, the impact of which ranges from 42.2% to 49.1%. Such a high impact of the level of poultry productivity indicates that production activities in the studied enterprises are carried out using high-yielding poultry breeds, using the latest automated equipment and implementing advanced poultry breeding technologies. In turn, an increase in the level of this indicator affects the improvement of such indicators as the preservation of the herd, feed consumption and the percentage of poultry decline. An innovative approach to production management will contribute to increasing the efficiency of poultry enterprises, which involves the allocation of a special logistics service that will carry out close interaction, analysis and planning of all stages of production, starting with the conduct of breeding work, ending with the receipt of finished products to the final consumer. The

allocation of a separate service engaged in logistics in production will lead to a significant reduction of costs at all stages of the enterprise's activity, will contribute to a decrease in the cost of production and will ensure an increase in the level of its profitability.

It has been established that the formation of integrated systems for managing material flows and optimizing the flow processes of poultry enterprises requires the creation of distribution warehouses for poultry products and their gradual transformation into a single information and logistics center, which will become a connecting link between producers of poultry products and their consumers, will combine the flows of logistics information into a single network to coordinate the actions of all producers of poultry products with the organization of distribution processes will contribute to the improvement of the organization of transport connections by increasing the coherence of the work of various types of transport; optimization of settlement systems between participants of logistics chains; reduction of product supply time due to reduction of downtime; organization of comprehensive customer service; optimization of loading of transport infrastructures; increasing the competitiveness and efficiency of this production.

The process of forming a strategy for the socio-economic development of poultry enterprises should be carried out on the basis of a comprehensive analysis of the internal and external environment of the enterprise. An important stage in choosing a socio-economic development strategy is the expansion of the product range of products, taking into account the weight share of dry egg powder production, risk assessment of the implementation of an investment project and SWOT analysis adapted to the task of increasing the economic efficiency of production. It is argued that for PPF "Agrocenter" the greatest attention should be paid to the intensive path of development of product production at all stages of the technological process due to the use of the latest high-performance equipment and the introduction of new capacities for the production of dry egg products. It has been proven that the expansion of the

product range at the enterprise will allow to additionally receive about UAH 1 million. net additional profit, and capital costs will pay off within three years. The implementation of this project will allow the enterprise to meet the needs of the food industry in the future and expand its own market for poultry products.

Rational use of available resources and obtaining maximum profit are priority tasks of effective functioning of poultry enterprises. A methodical toolkit for the formation of the production program of poultry enterprises is proposed, which involves the construction of an economic-mathematical model of production planning divided into the following stages: групування поголів'я ПТИЦІ за ваговими категоріями, calculation of production yield in slaughter weight, determination of the quantity of finished products according to poultry meat processing options, calculation of the cost of poultry meat processing and profit from the sale of poultry products, and determination of production volumes depending on the demand for different types of products on different days of the week. Drawing up an optimal poultry meat processing plan will provide an opportunity to optimize production processes taking into account consumer demand. This will help the enterprise to quickly respond to changes in demand for sold products and make scientifically based management decisions on planning production volumes, which are focused on obtaining maximum profit. The practical implementation of the proposed methodology indicates the advantage of increasing the economic efficiency of poultry enterprises over the strategy of passive management.

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# ***APPENDICES***

## QUESTIONNAIRE № \_\_\_\_\_

**1. Specify where you usually buy food (especially meat):**

hypermarket	specialized food market
supermarket	specialized butcher shops
minimarket (step availability store	• shopping centers

**2. Specify what affects your choice of trading network:**

price policy	location
wide range	product quality
work schedule	convenient planning of the trade network
service level	recommendations of friends, acquaintances

**3. How often do you buy how often do you buy meat?**

2-3 times a month	once a month and less often
once weekly	I don't buy at all

**4 . What types of meat do you buy most often?**

beef	• poultry
pork	• rabbit
mutton	

**5 . Do you consume products. which is produced with the addition of poultry meat?**

yes  
no

**6. Indicate which main criteria when buying poultry meat or their processing products (subproducts) affect his choice:**

taste qualities  
attractive appearance  
reasonable price  
reputation of the manufacturer  
availability (availability in the store)  
wide range  
popularity of the brand (brand)  
date of production and final date of consumption

**7. Do you buy chicken offal (neck, stomach, liver, heart)?**

yes  
no

very rarely

**8. What types of poultry meat or their processing products do you most often buy?**

whole carcass	• fillet
thigh	• wing
drumstick	• minced chicken
• quarter back	• soup products

**9. What type of poultry meat processing do you prefer?**

refrigerated  
deep freeze

**10. Which chicken brand do you prefer:**

“Nasha Ryaba”	“Noble chicken”
“Gavril chickens”	“Dnipro chickens”
other brand (specify) _____	

**Thank you for participating!**

**Scale of even comparisons T. Saati**

<b>Relative importance (points)</b>	<b>Definition</b>	<b>Explanation</b>
1	equal importance	both elements make the same contribution
3	one element is slightly more important than the other	experience allows you to put one element slightly higher than the other
5	significant advantage	unconditional superiority of one over the other
7	a great advantage	one element is so more important than the other that it is practically significant
9	absolute superiority of one over the other	the obviousness of the advantage is confirmed by the majority
2,4,6,8	intermediate estimates between adjacent statements	compromise solution
inverse values of the numbers above	if when comparing one element with the second, obtained from the above-mentioned numbers (1-9), then when comparing the second with the first, we get the inverse value	

**Average values of the consistency index for matrices of different orders**

Matrix order	3	4	5	6	7	8	9	10	11	12	13	14	15
CIA	0,58	0,9	1,12	1,24	1,32	1,41	1,45	1,49	1,51	1,54	1,56	1,57	1,59

## Appendix C

### Matrix of paired comparisons and their consistency for third-level indicators according to the relevant evaluation criteria

Evaluation criteria	1	2	3	4	Priority vector	
<b>Productivity</b>						
1	1	9	7	8	0,6895	$\lambda_{max} = 4,5055$
2	1/9	1	4	6	0,1855	CI=0,1685
3	1/7	1/4	1	3	0,0829	CIA=0,9
4	1/8	1/6	1/3	1	0,0421	RC=0,1872
<b>Preservation of the herd</b>						
1	2	1	4	4/8	0,3540	$\lambda_{max} = 4,3271$
2	1	1/2	2	5/6	0,2389	CI=0,1090
3	6	2/8	1	3/8	0,2168	CIA=0,9
4	1/2	1/4	8/3	1	0,1903	RC=0,1211
<b>Feed costs</b>						
1	3	3	1	5	0,5117	$\lambda_{max} = 4,1106$
2	1/3	4	2	1	0,2518	CI=0,0368
3	1	1/2	1/3	3	0,1657	CIA=0,9
4	1/5	1	1/3	1/4	0,0708	RC=0,0408
<b>% deadstock</b>						
1	1/3	5/3	2	1	0,3078	$\lambda_{max} = 4,3867$
2	1/3	3/5	1	6/8	0,2707	CI=0,1289
3	4/9	1	2,4	3	0,2350	CIA=0,9
4	1	3	1/2	1/4	0,1865	RC=0,1432

*Source: calculated by the author*

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**ПІДВИЩЕННЯ ЕКОНОМІЧНОЇ ЕФЕКТИВНОСТІ ТА  
КОНКУРЕНТОСПРОМОЖНОСТІ ПІДПРИЄМСТВ  
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