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AND SUPPLY CHAIN MANAGEMENT**

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## Contents

INTRODUCTION	5
<b>GULU-ZADE E.S.</b> Deputy Director of Heydar Aliyev International Airport, Lecturer of the Department of Management National Aviation Academy (Azerbaijan), <b>BUGAYKO D.O.</b> Doctor of Science (Economics), Professor (Associate), Vice - Director of Educational Scientific International Cooperation and Education Institute, Instructor of ICAO Institute, Professor of Logistics Department National Aviation University (Ukraine), <b>ALEKPEROVA F.F.</b> PhD in Economics, Professor (Associate), Professor (Associate) of the Department of Management National Aviation Academy (Azerbaijan)	
FORMATION AND DISTRIBUTION INCOME OF THE ENTERPRISE	6 – 18
<b>HRYHORAK M.Yu.</b> Doctor of Economics, Associate Professor, Senior Research Fellow in Institute of Cybernetics of the National Academy of Sciences of Ukraine (Ukraine), <b>ZAKHARCHENKO O.V.</b> Doctor of Sciences (Economics), Associate Professor, Professor of the Department of Management and Administration, Rauf Ablyazov East European University (Ukraine), <b>HARMASH O.M.</b> PhD (Economics), Associate Professor, Associate Professor of Logistics Department National Aviation University (Ukraine), <b>TRUSHKINA N.V.</b> PhD (Economics), Senior Research, Doctoral Student, Research Centre of Industrial Problems of Development of NAS of Ukraine (Ukraine), <b>LUNOV L. Ye.</b> Postgraduate, Institute of Industrial Economics of the National Academy of Sciences of Ukraine (Ukraine)	
<i>INFRASTRUCTURE PROVISION OF INDUSTRIAL WASTE MANAGEMENT IN THE CONTEXT OF THE STRATEGY FOR RECOVERY OF THE NATIONAL ECONOMY OF UKRAINE</i>	19 – 35
<b>KARPUN O.V.</b> PhD of Economics, Associate Professor, Associate Professor of Logistics Department of National Aviation University (Ukraine), <b>MARCHUK V.Ye.</b> Doctor of Engineering, Professor, Professor of Logistics Department National Aviation University (Ukraine)	
<i>LOGISTIC APPROACH TO THE SEGMENTATION OF THE COMPANY'S CUSTOMERS AS A BASIS FOR THE FORMATION OF LOGISTICS SERVICES</i>	36 – 45
<b>KOLODINSKYI S.B.</b> Doctor of Economic Sciences, Associate Professor, Professor of the Department Management and Administration PHEI «Rauf Ablyazov East European University» (Ukraine), <b>HUTSALIUK O.M.</b> Doctor of Economic Sciences, Associate Professor, Vice-Rector for Scientific and Pedagogical Activities PHEI «Rauf Ablyazov East European University» (Ukraine), <b>KRAMSKYI S.O.</b> Candidate of technical sciences, Associate professor, Senior researcher department of market mechanisms and structures, State institution «Institute of market and economic and ecological research National Academy of Sciences of Ukraine» (Ukraine)	
<i>MANAGEMENT OF INTER-FIRM COOPERATIVE RELATIONS WITH THE EXCHANGE OF INNOVATIONS BY ENTERPRISES OF UKRAINE</i>	46 – 55
<b>BANAR O.V.</b> Doctor of Economics, Associate Professor, Professor of the Department Management and Administration PHEI «Rauf Ablyazov East European University» (Ukraine), <b>STARYNETS O.H.</b> Doctor of Economic Sciences, Associate Professor, Professor of the Department of Management and Marketing, Polissia National University, <b>KOZLOVTSEVA V.A.</b> Phd in Economic Sciences, Associate Professor, Department of Public Management and Management of Environmental Activities, Odesa State Environmental University (Ukraine), <b>BONDAR Iu.A.</b> Candidate of Economic Sciences, Associate Professor, Associate Professor of Department of Aviation Management Flight Academy of the National Aviation University (Ukraine),	
<i>ASSESSMENT OF FACTORS FOR FORMING THE FINANCIAL POTENTIAL OF AGRICULTURAL PRODUCTION OF THE NATIONAL ECONOMY</i>	56 – 65



## INTRODUCTION

We are happy to invite you to get acquainted with the first issue of the new scientific and practical publication "Intellectualization of Logistics and Supply Chain Management".

We strongly believe that the launch of this magazine indicates the objective need to rethink a wide range of issues related to the development of theory and practice in logistics and supply chain management, awareness of the need to unite the scientific community and logistics practitioners, dissemination of modern knowledge and best practices for innovative development of the logistics services market.

The first issue of the magazine is published at a difficult time. The global coronavirus pandemic and the deep economic crisis have significantly worsened business activity in the world. Currently, global supply chains are collapsing, international trade is declining, and competition between global and regional logistics operators is intensifying. The most common thesis is that the world will never be the same again. Industry experts predict the emergence of new, more flexible and adaptive supply chain management strategies and approaches to logistics business process management. The trend towards collaborations, cooperation and unification of services is emerging, comprehensive proposals for clients are being developed. There is increasing talk about the need to build bimodal supply chains, which involves the development of different decision-making scenarios: the traditional approach - cost-effective efficiency, low risk, high predictability; a new approach "second mode" - rapid recognition of opportunities, adaptability, willingness to solve unexpected problems and look for new opportunities.

Radical transformations of the global and national markets for logistics services require appropriate scientific support. Logistics science has a special role to play in this process. Initiating the emergence of a new journal, we decided to focus on its coverage of problematic aspects of the formation and development of logistics systems at the micro, mezo and macro levels, supply chain management, digitization of logistics, methods and tools for optimizing processes in logistics and supply chains, sociopsychology relations and network interaction of enterprises using cloud technologies, artificial intelligence, e-learning, neural business process management systems, etc.

Therefore, we invite scientists, researchers and business representatives, as well as our colleagues from abroad, to cooperate and present the results of scientific research, to discuss and debate on them, to work together to develop the scientific theory of logistics and promote mutual intellectual enrichment.

We hope that the new scientific publication will become a theoretical guide for young researchers and representatives of other fields.

**HRYHORAK Mariia**  
Chief Editor



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## **FORMATION AND DISTRIBUTION INCOME OF THE ENTERPRISE**

**Gulu-zade Elmir, Bugayko Dmitriy, Alekperova Farida.** *"Formation and distribution income of the enterprise". Regardless of the profile of the enterprise, in the process of activity, the formation of its income always occurs. It is this aspect of the activity that is most important for all stakeholders - the owners of the enterprise, employees, the state, since the successful formation and proper distribution of income allows all participants in production activities to ultimately achieve their financial goals - primarily increasing welfare and quality of life, making a profit. Income is the primary incentive to create new or develop existing enterprises. The opportunity to make a profit encourages people to look for more efficient ways to combine resources, to invent new products that may be in demand, to apply organizational and technical innovations that promise to increase production efficiency. Working profitably, each enterprise contributes to the economic development of society, contributes to the creation and enhancement of social wealth and the growth of the well-being of the people. Regardless of the profile of the enterprise, in the process of activity, the formation of its income always occurs. Income is the primary incentive to create new or develop existing enterprises. The opportunity to make a profit encourages people to look for more efficient ways to combine resources, to invent new products that may be in demand, to apply organizational and technical innovations that promise to increase production efficiency. Working profitably, each enterprise contributes to the economic development of society, contributes to the creation and enhancement of social wealth and the growth of the well-being of the people. An important task of every enterprise is to obtain large incomes, at the lowest cost, by saving in spending money and increasing the efficiency of their use. This means that all expenses are covered by the corresponding income. In this regard,*

*the role of special knowledge in the field of economic analysis and planning increases: income, search for reserves to increase profits and profitability.*

**Keywords:** enterprise, income, formation, distribution, financial goals.

**Гулу-заде Ельмір, Бугайко Дмитро, Алекперова Фаріда. «Формування та розподіл доходу підприємства».** Незалежно від профілю підприємства, в процесі діяльності завжди відбувається формування його доходу. Саме ця сторона діяльності є найбільш важливою для всіх зацікавлених сторін – власників підприємства, працівників, держави, оскільки успішне формування та правильний розподіл доходів дозволяє всім учасникам виробничої діяльності в кінцевому підсумку досягти своїх фінансових цілей – насамперед підвищення добробуту і якості життя, отримання прибутку. Дохід є основним стимулом для створення нових або розвитку існуючих підприємств. Можливість отримання прибутку спонукає людей шукати більш ефективні способи об'єднання ресурсів, винаходити нові продукти, які можуть мати попит, застосовувати організаційні та технічні нововведення, які обіцяють підвищення ефективності виробництва. Працюючи прибутково, кожне підприємство сприяє економічному розвитку суспільства, сприяє створенню і примноженню суспільного багатства, зростанню добробуту людей. Незалежно від профілю підприємства, в процесі діяльності завжди відбувається формування його доходу. Дохід є основним стимулом для створення нових або розвитку існуючих підприємств. Можливість отримання прибутку спонукає людей шукати більш ефективні способи об'єднання ресурсів, винаходити нові продукти, які можуть мати попит, застосовувати організаційні та технічні нововведення, які обіцяють підвищення ефективності виробництва. Працюючи прибутково, кожне підприємство сприяє економічному розвитку суспільства, сприяє створенню і примноженню суспільного багатства, зростанню добробуту людей. Важливим завданням кожного підприємства є отримання великих доходів при найменших витратах за рахунок економії витрачання коштів і підвищення ефективності їх використання. Це означає, що всі витрати покриваються відповідними доходами. У зв'язку з цим зростає роль спеціальних знань у галузі економічного аналізу та планування: доходів, пошуку резервів збільшення прибутків і рентабельності.

**Ключові слова:** підприємство, дохід, формування, розподіл, фінансові цілі.

**Гулу-заде Ельмір. С., Бугайко Дмитрий, Алекперова Фаріда. "Формирование и распределение дохода предприятия".** Вне зависимости от профиля предприятия, в процессе деятельности всегда происходит формирование его дохода. Именно эта сторона деятельности наиболее важна для всех заинтересованных сторон – собственников предприятия, работников, государства, поскольку успешное формирование и правильное распределение доходов позволяет всем участникам производственной деятельности в конечном итоге достичь своих финансовых целей – прежде всего повышения благосостояния и качества жизни, получения прибыли. Доход является основным стимулом для создания новых или развития существующих предприятий. Возможность получения прибыли побуждает людей искать более эффективные способы объединения ресурсов, изобретать новые продукты, которые могут быть востребованными, применять организационные и технические нововведения, обещающие повышение эффективности производства. Работая прибыльно, каждое предприятие способствует экономическому развитию общества, способствует созданию и приумножению общественного богатства, росту благосостояния людей. Вне зависимости от профиля предприятия, в процессе деятельности всегда происходит формирование его дохода. Доход является основным стимулом для создания новых или развития существующих предприятий. Возможность получения прибыли побуждает людей искать более эффективные способы объединения ресурсов, изобретать новые продукты, которые могут быть востребованы, применять организационные и технические новшества, обещающие повысить

*эффективность производства. Работая прибыльно, каждое предприятие вносит свой вклад в экономическое развитие общества, способствует созданию и приумножению общественного богатства, росту благосостояния народа. Важной задачей каждого предприятия является получение больших доходов при наименьших затратах за счет экономии расходования денежных средств и повышения эффективности их использования. Это означает, что все расходы покрываются за счет соответствующих доходов. В связи с этим возрастает роль специальных знаний в области экономического анализа и планирования: доходов, поиска резервов увеличения прибыли и рентабельности.*

**Ключевые слова:** предприятие, доход, формирование, распределение, финансовые цели.

**Introduction.** The relevance of this topic lies in the fact that income is one of the main factors determining the final financial result of the enterprise. The practical significance of the work lies in the development of specific proposals aimed at increasing the income of the enterprise. As a result of the above, the increase in income at the enterprise today becomes extremely relevant. Analysis of income allows you to identify the main factors in the development of the enterprise, how efficiently resources are used, the potential of the enterprise, as well as determine the influence of external and internal factors on the amount of income, the order of their distribution. In addition, payments from profits to the budget form the bulk of the resources of the state, regional and local authorities.

The elements of scientific novelty in this article were the proposed sequence of income analysis in combination with the directions for improving the formation and distribution of enterprise income. Despite the multidimensional consideration of the actual problems of accounting for the income of enterprises, the questions of directions for its improvement are beyond doubt, however, there are differences in the methodological approaches of researchers to their definition. This circumstance, combined with the relevance of the problem under study, determined the choice of the topic, object and subject of the study, the formulation of its goals and objectives. Income is the primary incentive to create new or develop existing enterprises. The opportunity to make a profit encourages people to look for more efficient

ways to combine resources, to invent new products that may be in demand, to apply organizational and technical innovations that promise to increase production efficiency. Working profitably, each enterprise contributes to the economic development of society, contributes to the creation and enhancement of social wealth and the growth of the well-being of the people. An important task of every enterprise is to obtain large incomes, at the lowest cost, by saving in spending money and increasing the efficiency of their use. This means that all expenses are covered by the corresponding income. In this regard, the role of special knowledge in the field of economic analysis and planning increases: income, search for reserves to increase profits and profitability.

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multidimensional consideration of the actual problems of accounting for the income of enterprises, the questions of directions for its improvement are beyond doubt, however, there are differences in the methodological approaches of researchers to their definition. This circumstance, combined with the relevance of the problem under study, determined the choice of the topic, object and subject of the study, the formulation of its goals and objectives.

An important task of every enterprise is to obtain large incomes, at the lowest cost, by saving in spending money and increasing the efficiency of their use. This means that all expenses are covered by the corresponding income. In this regard, the role of special knowledge in the field of economic analysis and planning increases: income, search for reserves to increase profits and profitability. The relevance of this topic lies in the fact that income is one of the main factors determining the final financial result of the enterprise. The practical significance of the work lies in the development of specific proposals aimed at increasing the income of the enterprise.

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differences in the methodological approaches of researchers to their definition. This circumstance, combined with the relevance of the problem under study, determined the choice of the topic, object and subject of the study, the formulation of its goals and objectives. The process of formation and distribution of the company's income is of particular importance for stimulating the sustainable development of the aviation industry in the context of the globalization of the world economy [1 - 3].

**The purpose of the article** is to provide structural analysis of formation and distribution income of the enterprise.

#### **Presentation of the main results.**

##### ***Economic content of enterprise income***

With the transition of the state economy to the foundations of a market economy, the multidimensional importance of income is enhanced. A joint-stock, leased, private or other form of ownership enterprise, having gained financial independence and independence, has the right to decide for what purposes and in what amounts to direct the income remaining after paying taxes to the budget and other mandatory payments and deductions.

Earning income is an indispensable condition and the goal of entrepreneurship of any economic structure; the effectiveness of management is assessed; profit is the main source of financing for economic and social development; profitability serves as the main criterion for choosing investment projects and programs for optimizing current costs, expenses, and financial investments.

Thus, profit acquired the most important, leading role in the new economic and financial mechanism for managing socio-economic development. This is the basis for financial stability and ensuring the income of enterprises, the state, and the population.

Income - as a criterion for the efficiency of reproduction and as an indicator that has two boundaries - the volume of production or services (sales) and the cost - has one important property: it reflects the end result

of intensive and extensive development. The latter is related to the factor of growth in production volume and natural savings from a relative decrease in conditionally fixed cost elements: wage fund (accordingly, accruals going to off-budget funds), depreciation, energy fuel, payments to the budget for resources, non-production and some other expenses.

As for the process of profit and cost planning, it has been democratized, i.e. left the center for enterprises that are free from control from above until the moment of taxation. However, in the event of a decrease in the volume of production and sales of products, the fall in profit and profitability occurs at a faster rate of decline in volume. Such a negative phenomenon is especially sensitive for "spurring" inflation: after all, relative savings on conditionally fixed costs, in particular on wages (except for pieceworkers), turn into overspending. And the faster the volume falls, the more sharply the income should decrease, undermining the already unstable revenue base of the budget.

Income - monetary or other values received as a result of any activity.

Income is the result of production and economic activity, obtained as the difference between the cost of goods and services sold and the costs incurred.

Income is a sum of money regularly and legally coming into direct possession of the subject of market relations. In doing so, the following points must be emphasized:

1. Income is usually represented by money;
2. Regularity of receipt;
3. The criterion of legality.

In a broad sense, "income is a monetary assessment of the results of the activities of any subject of a market economy (legal entity and individual)". This definition is complete as it does not include income from recipients who are already or not yet able to participate in economic activity. Whose monetary

income comes in the form of transfer, i.e. refunds from the budget.

The desire to maximize one's income dictates the economic logic of behavior for any market entity. It acts as an ultimate goal and a powerful stimulus for mass everyday entrepreneurship.

The receipt by the firm of income indicates the sale of products, the expediency of the costs incurred, and the public recognition of the consumer properties of the product.

The main source of income is the proceeds from the sale of products, namely that part of it that remains minus material, labor and monetary costs for the production and sale of products. Consider the types of income of the enterprise (types of revenue from the sale of products):

Total (gross) income is the total amount of money received from the sale of a certain amount of goods. It is determined by multiplying the price of a good by its quantity:

$$QP = TR \quad (1)$$

where TR - total revenue (revenue) - total revenue.

In conditions of pure (perfect) competition, the firm sells its products at a constant price. Consequently, its income will be in direct proportion to the number of products sold. Therefore, the curve of total income (TR) has the form of a straight ascending line.

Average income (AR) is the proceeds from the sale of a unit of production, i.e. gross income per unit of product sold. It acts as the price per unit for the buyer and as income per unit for the seller.

Average income is the quotient of total income divided by the number of products sold.

At a constant price, the average income AR is equal to the selling price, which is obvious from the above formula:

$$AR = TR/Q = PQ/Q = P \quad (2)$$

Therefore, price and income in economic theory act as one and the same phenomenon, which is only considered from different points of view. It makes sense to calculate the average income (AR) for a certain period only if the prices for manufactured homogeneous products change (or if the firm focuses on the production of a number of models, products, etc.).

Marginal (additional) income (MR) is the additional income to the gross income of the firm received from the production and sale of one additional unit of goods. It makes it possible to judge the efficiency of production, because it shows the change in income as a result of an increase in output and sales of products by an additional unit.

Marginal revenue (MR) allows you to evaluate the possibility of payback for each additional unit of output. In combination with the indicator of marginal cost, it serves as a cost guide for the possibility and expediency of expanding the volume of production of a given firm.

Marginal revenue is defined as the difference between the gross income from the sale of  $n + 1$  units of goods and the gross income from the sale of  $n$  goods:

$$MR = TR_{n+1} - TR_n \quad (3)$$

Under perfect competition, the firm sells additional units of output at a constant price, since any seller cannot influence the established market price. Therefore, marginal revenue is equal to the price of the good, and its curve coincides with the curve of perfectly elastic demand and average income:

$$MR = D = AR = P \quad (4)$$

The most important factors in the growth of the company's income are:

- Increasing the volume of production and sales of products;
- Introduction of scientific and technical developments;
- Increasing labor productivity;

- Cost reduction.

The amount of income of the enterprise is one of the results of its economic activity. The income of the enterprise is the financial basis of its activities. The most complete economic essence of the income of the enterprise is manifested through the following major tasks, the implementation of which they provide:

1) Reimbursement of all current costs (expenses) associated with the implementation of its economic activities. The implementation of this task ensures the self-sufficiency of the current economic activity of the enterprise;

2) Ensuring the payment of various types of tax payments that ensure the formation of funds from the state and local budgets, extra-budgetary funds. The implementation of this task ensures the fulfillment of financial obligations to the state;

3) Formation of profit of the enterprise. The fulfillment of this task provides self-financing of the development of the enterprise in the coming period. [5]

Thus, income is a sum of money regularly and legally coming into the immediate disposal of the subject of market relations. The goal of any business is to maximize revenue. The receipt by the firm of income indicates the sale of products, the expediency of the costs incurred, and the public recognition of the consumer properties of the product. Income from the sale of products (works, services) is the main type of income for commercial organizations in modern economic conditions.

### ***Enterprise income classification***

An organization's income is one of the elements (along with expenses) of information on the financial results of an organization's activities that is generated in accounting and reflected in the income statement. The procedure for reflecting income in the accounting of an organization is defined in the law of the Republic of Azerbaijan dated June 29, 2004 No. 716-IIG on accounting. This law provides the following

definition of income. An organization's income is recognized as an increase in economic benefits as a result of the receipt of assets (cash, other property) and (or) the repayment of obligations, leading to an increase in the capital of this organization, with the exception of contributions from participants (property owners). Future economic benefits are the potential for the property to directly or indirectly contribute to the cash flow of the entity. An item of property is considered to bring future economic benefits to the entity if it can be

- a) used separately or in combination with another asset in the process of production of products, works, services intended for sale;
- b) exchanged for another asset;
- c) used to pay off obligations;
- e) distributed among the owners of the organization. [6]

Capital is the balance of the organization's economic assets after deducting accounts payable from them. In other words, the amount of capital is calculated according to the balance sheet as the difference between assets and liabilities. According to the Regulations on Accounting and Reporting, the organization's equity includes authorized (share), additional and reserve capital, retained earnings and other reserves; According to the above law, the following receipts to the organization of funds from legal entities and individuals are not considered income:

- 1) the amount of value added tax, excises, sales taxes, export duties and other similar obligatory payments;
- 2) receipts under commission agreements, agency and other similar agreements for the benefit of the committent, principal, etc.
- 3) receipts in the order of advance payment for products, goods, works, services, as well as advances on account of payment for products, goods, works, services;
- 4) a deposit to secure obligations;
- 5) receiving property as a pledge;
- 6) receipts of funds, other property to repay a loan, a loan granted to a borrower.

A clear classification of income and expenses is the basis for a reasonable determination of the net result of activities for a certain period. In addition, classification is necessary for:

- 1) determining from which source the main part of the income and profit of the reporting period was received;
- 2) separation of the production cost of products and non-production costs, including management and sales costs, as well as costs for financial activities;
- 3) separation of fixed and variable costs for the purposes of managerial and financial analysis. [7]

In this regard, the following classification of income has been established depending on their nature, the conditions for receiving and the activities of the organization:

- 1) income from ordinary activities;
- 2) other income.

Previously, other income was divided into:

- 1) operating income;
- 2) non-operating income;
- 3) extraordinary income.

Now in accounting, these incomes of the organization are grouped into other incomes.

The organization independently relates all income received to income from ordinary activities or to other income. At the same time, the organization is guided by its accounting policy, in which it determines the methodology for grouping income.

Let us consider in more detail the classification of the organization's income.

Income from ordinary activities is the proceeds from the sale of finished products, goods, performance of work, provision of services. [8]

A part of the income is allocated, which can relate either to income from ordinary

activities or to other income. These include, in particular:

- 1) rent for assets transferred by the organization for temporary possession and use;
- 2) license payments (including royalties) for the use of intellectual property. These payments are received by the organization that granted for a fee the rights arising from patents for inventions, industrial designs and other types of intellectual property;
- 3) income related to the participation of the organization in the authorized capital of other organizations.

If the operations from which the organization received one of the listed types of income are the subject of the organization's activities, then this income is recognized as income from ordinary activities. Otherwise, it is other income.

It should be noted that the concepts of the type of activity and the subject of activity are not identical. The type of activity is always specified in the charter of the organization. And the proceeds from this type of activity, regardless of its size, will always be income from ordinary activities.

The ratio of certain business operations of the organization to the subject of its activities is determined on the basis of materiality. An indicator is considered significant if it has a sufficient impact on the assessment of the financial position, the financial result of the organization and the cash flow. The organization determines the criterion of materiality in its accounting policy. It is set as a percentage and expresses the ratio of a given indicator to the sum of the same indicators. When determining the criterion (or threshold) of materiality, the organization proceeds from the assessment of the indicator, its nature and specific circumstances of occurrence. In the practice of our country, as a rule, a materiality threshold equal to or greater than 5% is applied.

Other income (income) of the organization includes, in particular, the following income:

1) the following receipts, if they are not recognized as income from ordinary activities:

- lease payments (receipts related to the provision for a fee for temporary use of the organization's assets);
- license payments for the use of intellectual property;
- income related to participation in the authorized capital of other organizations (including interest and other income from securities).

2) profit received by the organization as a result of joint activities (under a simple partnership agreement);

3) proceeds from the sale of fixed assets and other assets other than cash, products, goods.

4) interest received for the provision of the organization's funds for use:

- under loan agreements concluded with legal entities;
- under loan agreements concluded with individuals (including their employees);
- under bank deposit agreements.

5) interest for the use by the bank of funds on the account of the organization in this bank;

6) revaluation of financial investments;

7) negative business reputation of the organization;

8) positive exchange rate and sum differences relating to interest received under loan agreements in foreign currency, in which the debt obligation is denominated in foreign currency or conventional monetary units.

The sum difference is understood as the difference between the manat valuation of the actually received asset, expressed in foreign currency, calculated at the official exchange rate, and the manat valuation of

this asset, calculated at the official exchange rate.

Other income also includes income that was previously considered as non-operating income:

- 1) fines, penalties, forfeits for violation of the terms of the contract;
- 2) assets received free of charge, including under a gift agreement;
- 3) receipts, in compensation for the losses caused to the organization;
- 4) profit of previous years, revealed in the reporting year;
- 5) amounts of accounts payable and depositor's debts for which the limitation period has expired;
- 6) exchange rate differences;
- 7) the amount of revaluation of assets;
- 8) surplus assets identified during the inventory.

Now other income is also considered to be receipts arising as a result of extraordinary circumstances of economic activity (natural disaster, fire, accident, nationalization, etc.). In particular, these include:

- 1) insurance indemnity;
- 2) the cost of material assets remaining from the write-off of assets unsuitable for restoration and further use.

These incomes may include other incomes similar to those discussed above.

Thus, the above Law in the classification distinguishes income from ordinary activities and other income. Income from ordinary activities is the proceeds from the sale of finished products, goods, performance of work, provision of services. Other income includes income not related to the normal activities of the enterprise.

#### ***The process of formation and distribution of enterprise income***

The process of income management includes a mechanism for their formation and distribution. Income is understood as an

increase in economic benefits in the form of receipts of assets or a decrease in liabilities, they lead to an increase in the value of the enterprise's own capital (with the exception of its changes resulting from additional contributions from the owners).

All incomes are divided into several groups:

- 1) income from ordinary activities;
- 2) other income.

The formation of enterprise income in the financial management system is determined by a number of the following indicators of profit and income:

1. Net proceeds from the sale of products (works, services) is the gross proceeds from the sale less value added tax, excises, returned goods and price discounts. It is this indicator that is the real basis for the subsequent calculation of profit indicators and the assessment of the profitability of the enterprise.

2. Gross profit from sales - net proceeds from sales minus production costs for products sold. This indicator allows you to analyze the effectiveness of the production activities of the enterprise.

3. Profit (loss) from core activities - gross profit from sales minus management costs and distribution costs. This indicator reflects the impact of management and marketing expenses on the financial result from sales.

4. Profit from financial activities - the balance of income and expenses from financial activities. This indicator is necessary in order to separate the profit from the production and economic activities of the enterprise from such sources of profit as the receipt of interest and dividends by the enterprise, foreign exchange transactions, etc.

5. Other income;
6. Profit (loss) before tax. [9]

The process of forming the income of an enterprise is refracted through the current

procedure for recording operations on the financial and economic activities of enterprises. They are greatly influenced by the accounting policy adopted by the enterprise. The policy pursued by the enterprise within the framework of the current legislation and the regulation on accounting for financial and economic activities, aimed at optimizing the financial aspects of the enterprise's activities in the coming year, is the accounting and financial policy of the enterprise.

In modern conditions, the main goal of income management in an enterprise is to create an income management system in accordance with Figure 1.

It is to determine in the most efficient way the price that a buyer would be willing to pay for a certain set of goods and services, and to explore the possibility of selling these sets to buyers at that price.

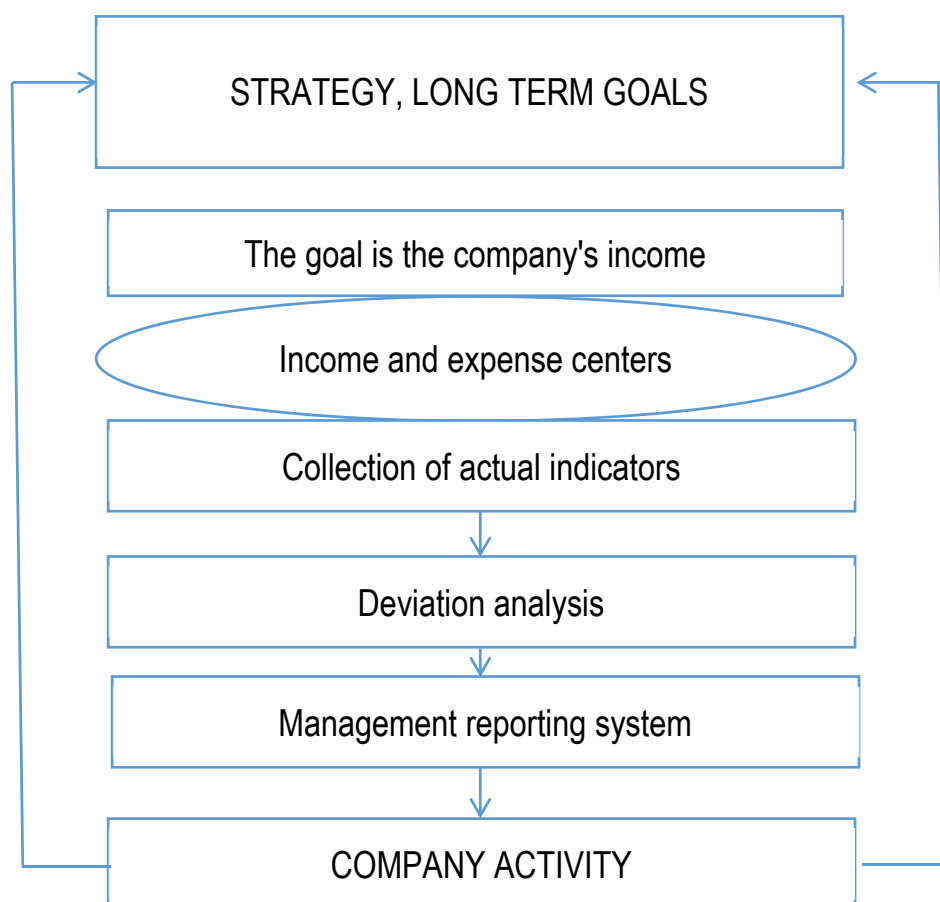


Figure 1 – Target settings for the formation of enterprise income

Consider the process of distribution of income received by a commercial organization in the course of financial and economic activities.

From an economic point of view, the process of distribution of enterprise income can be represented as follows:

1. Coverage of production costs and losses.

2. Distribution of net income for purposes aimed at the development of the enterprise (economic, technical, social, etc.).

From the point of view of accounting, the distribution of income received by the organization takes the form of expenses of the organization.

The organization's expenses are one of the elements (along with income) of the information on the financial results of the

organization's activities that is generated in the accounting records, which are reflected in the Profit and Loss Statement.

The organization's expenses are the decrease in economic benefits as a result of the disposal of assets (cash, other property) and (or) the emergence of liabilities, leading to a decrease in the capital of this organization, with the exception of a decrease in contributions by decision of the participants (property owners).

Expenses include material costs, costs for the production of products (works, services), remuneration of employees and management personnel, depreciation, other costs, as well as losses (losses from natural disasters, sales of fixed assets, changes in exchange rates, etc.). Expenses are recognized in the income statement when the resulting decrease in future economic benefits due to a decrease in assets or an increase in accounts payable can be measured with a reasonable degree of reliability. [10]

For accounting purposes, the organization's expenses are divided into expenses for ordinary activities and other expenses.

Expenses related to ordinary activities include expenses related to:

- production and sale of products;
- purchase and sale of goods;
- performance of works;
- provision of services.

Expenses for ordinary activities are grouped:

- by types of expenses;
- by economic elements;
- according to cost items.

Two groups of expenses are defined by their types:

1) expenses associated with the acquisition of raw materials, materials, goods and other inventories;

2) expenses arising directly in the process:

- processing (improvement) of inventories for the purposes of production, performance of work, provision of services;
- sales of products, works, services;
- sale (resale) of goods.

Costs for ordinary activities should be accounted for by the following economic elements:

- material costs;
- labor costs;
- deductions for social needs;
- depreciation;
- other expenses.

In addition, costs should be accounted for by cost items. The enterprise establishes the list of cost items independently in its accounting policy.

Let us consider in more detail the process of distributing the income of an enterprise that makes up the balance sheet profit (or, in other words, the final financial result of the activity - "real" income).

The basic principles for distributing the balance sheet profit of a commercial organization can be formulated as follows:

- the profit received by the enterprise as a result of production, economic and financial activities is distributed between the state and the enterprise as an economic entity;

- profit for the state goes to the relevant budgets in the form of taxes and fees, the rates of which cannot be arbitrarily changed. Tax rates, the procedure for their calculation and contributions to the budget are established by law;

- the value of the profit of the enterprise, remaining at its disposal after paying taxes, should not reduce its interest in increasing the volume of production and improving the results of production and economic and financial activities;

- the profit remaining at the disposal of the enterprise, first of all, is directed to accumulation, which ensures its further development, and only in the rest - to consumption.



At the enterprise, net profit (net income) is subject to distribution, i.e. profit remaining at the disposal of the enterprise after paying taxes and other obligatory payments. Sanctions paid to the budget and some off-budget funds are collected from it.

The distribution of net profit reflects the process of formation of funds and reserves of the enterprise to finance the needs of production and the development of the social sphere.

The distribution of net profit is one of the areas of intra-company planning, the importance of which is growing in a market economy. The procedure for the distribution and use of profits at the enterprise is fixed in the charter of the enterprise and is determined by the regulation, which is developed by the relevant divisions of economic services and approved by the governing body of the enterprise.

The estimate of expenses financed from profits includes expenses for the development of production, social needs of the workforce, material incentives for employees and charitable purposes.

The costs associated with the development of production include the costs of research, design, design and technological work, financing the development and development of new types of products and technological processes, the costs of improving technology and organizing production, upgrading equipment, costs associated with technical re-equipment and reconstruction of existing production, expansion of enterprises. The same group of expenses includes expenses on repayment of long-term bank loans and interest on them. The costs for environmental protection measures, etc., are also planned here. Contributions of enterprises from profits as contributions of founders to the creation of the authorized capital of other enterprises, funds transferred to unions, associations, concerns, which include the enterprise, are also considered to be the use of profits for development.

The distribution of profits for social needs includes expenses for the operation of social facilities that are on the balance sheet of the enterprise, financing the construction of non-production facilities, organizing and developing subsidiary farming, holding recreational, cultural events, etc.

The costs of material incentives include one-time incentives for the performance of particularly important production tasks, the payment of bonuses for the creation, development and implementation of new technology, the cost of providing material assistance to workers and employees, lump-sum benefits for labor veterans retiring, etc.

All profit remaining at the disposal of the enterprise is divided into two parts. The first increases the property of the enterprise and participates in the process of accumulation. The second characterizes the share of profit used for consumption. At the same time, it is not necessary to use all the profits allocated for accumulation in full. The rest of the profit not used to increase the property has an important reserve value and can be used in subsequent years to cover possible losses and finance various expenses.

Retained earnings, in a broad sense, as profit used for accumulation, and retained earnings of past years, indicate the financial stability of the enterprise, the availability of a source for further development.

**Conclusions.** Thus, the process of income management includes a mechanism for their formation and distribution. In modern conditions, the main goal of income management in an enterprise is the creation of an income management system.

The formation of enterprise income is determined by a number of the following indicators of profit and income:

1. Net sales proceeds.
2. Gross profit from sales.
3. Profit (loss) from the main activity.
4. Profit from financial activities.
5. Other income;
6. Profit (loss) before tax.

From the point of view of accounting, the distribution of income received by the

organization takes the form of expenses of the organization.

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## **INFRASTRUCTURE PROVISION OF INDUSTRIAL WASTE MANAGEMENT IN THE CONTEXT OF THE STRATEGY FOR RECOVERY OF THE NATIONAL ECONOMY OF UKRAINE**

*Hryhorak Mariia, Zakharchenko Oleh, Harmash Oleh, Trushkina Nataliia, Lunov Lev.*  
*"Infrastructure provision of industrial waste management in the context of the strategy for recovery of*

*the national economy of Ukraine". The article proposes an integrated approach to evaluating the development of the industrial waste management system on the example of the Kyiv region. This approach is based on the application of a set of indicators that characterize the current state of functioning of this system from the ecological and economic points of view. On the basis of the received results of the conducted diagnostics, barriers, threats, ecological principles of functioning of the regional industrial waste management system were identified.*

*As a result of the study, it was proved that for effective infrastructural support of industrial waste management, it is advisable to implement a comprehensive approach, the essence of which is the integration of the principles of transformation of the industrial waste management system, the implementation of the reverse logistics algorithm, the main components of the organizational and economic mechanism (functions, methods, management tools, information systems, digital, "green" and innovative technologies), financial instruments of green investment for the implementation of the regional industrial waste management strategy.*

*The implementation of the proposed integrated approach will contribute to the adoption of justified innovative decisions on the greening of logistics activities and environmental management; timely solution of problems of management of return flows of production waste using the principles of reverse logistics; minimization of the negative impact on the environment by reducing the volume of waste generation, increasing the volume of processing and reuse of industrial waste; effective implementation of circular economy models, transition to expanding producer responsibility; increasing the level of environmental safety of the region and the country; achieving the goals of sustainable development of the national economy.*

*It has been established that in order to improve the industrial waste management system in the region, it is expedient to: introduce the latest technologies and equipment for collection, sorting, transportation, processing and utilization of waste taking into account advanced European practices; promoting the use of waste recycling as secondary raw materials on the basis of "green" investment; development of a financial mechanism for the application of public-private partnership based on attracting private investments and other non-budgetary sources of financing in the field of industrial waste management; creation of an appropriate cluster structure as an organizational form of partnership in the field of industrial waste management; development and implementation of tools for economic stimulation of industrial waste utilization; implementation of the concept of reverse logistics in the context of the green and circular economy.*

**Keywords:** national economy, natural environment, industrial waste, industrial waste management, regional waste management system, infrastructural support, waste management hierarchy, waste recycling, reverse logistics, ecological principles, green economy, circular economy, sustainable development, transformation, green investment, green technologies, integrated approach, logistics infrastructure, cluster structure, synergistic effect.

**Григорак Марія, Захарченко Олег, Гармаш Олег, Трушкіна Наталія, Лунов Лев.** **«Інфраструктурне забезпечення управління промисловими відходами у контексті стратегії відновлення національної економіки України».** У статті запропоновано інтегрований підхід до оцінювання розвитку системи управління промисловими відходами на прикладі Київської області. Даний підхід базується на застосуванні комплексу показників, які характеризують поточний стан функціонування даної системи з екологічної та економічної точок зору. На підставі одержаних результатів проведеної діагностики виявлено бар'єри, загрози, екологічні засади функціонування регіональної системи управління промисловими відходами.

У результаті дослідження доведено, що для дієвого інфраструктурного забезпечення управління промисловими відходами доцільно впроваджувати комплексний підхід, суть якого полягає в інтеграції принципів трансформації системи управління промисловими відходами, впровадження алгоритму реверсивної логістики, основних складових організаційно-економічного механізму

(функцій, методів, засобів управління, інформаційних систем, цифрових, «зелених» та інноваційних технологій), фінансових інструментів зеленого інвестування для реалізації регіональної стратегії управління промисловими відходами.

Впровадження запропонованого комплексного підходу сприятиме прийняттю обґрунтованих інноваційних рішень з екологізації логістичної діяльності та екологічного менеджменту; своєчасному вирішенню проблем з управління зворотними потоками відходів виробництва із застосуванням принципів реверсивної логістики; мінімізації негативного впливу на довкілля за рахунок скорочення обсягу утворення відходів, збільшення обсягу переробки та повторного використання промислових відходів; дієвому впровадженню моделей циркулярної економіки, переходу до розширення відповідальності виробників; підвищенню рівня екологічної безпеки регіону та країни; досягненню цілей сталого розвитку національної економіки.

Встановлено, що задля вдосконалення системи управління промисловими відходами у регіоні доцільним є: впровадження новітніх технологій і устаткування зі збирання, сортування, транспортування, переробки та утилізації відходів з урахуванням передової європейської практики; сприяння використанню рециклінгу відходів як вторинної сировини на засадах «зеленого» інвестування; розроблення фінансового механізму застосування державно-приватного партнерства на основі залучення приватних інвестицій та інших позабюджетних джерел фінансування у сферу управління промисловими відходами; створення відповідної кластерної структури як організаційної форми партнерства в сфері управління промисловими відходами; розроблення й впровадження інструментів економічного стимулювання утилізації промислових відходів; реалізація концепції реверсивної логістики у контексті зеленої та циркулярної економіки.

**Ключові слова:** національна економіка, навколишнє природне середовище, промислові відходи, управління промисловими відходами, регіональна система управління відходами, інфраструктурне забезпечення, ієрархія управління відходами, рециклінг відходів, реверсивна логістика, екологічні засади, зелена економіка, циркулярна економіка, сталий розвиток, трансформація, зелене інвестування, зелені технології, комплексний підхід, логістична інфраструктура, кластерна структура, синергетичний ефект.

**Григорак Марія, Захарченко Олег, Гармаш Олег, Трушкіна Наталія, Лунов Лев.** **"Инфраструктурное обеспечение управления промышленными отходами в контексте стратегии восстановления национальной экономики Украины".** В статье предложен интегрированный подход к оценке развития системы управления промышленными отходами на примере Киевской области. Данный подход основан на применении комплекса показателей, характеризующих текущее состояние функционирования данной системы с экологической и экономической точек зрения. На основании полученных результатов проведенной диагностики выявлены барьеры, угрозы, экологические основы функционирования региональной системы управления промышленными отходами.

В результате исследования доказано, что для действенного инфраструктурного обеспечения управления промышленными отходами целесообразно внедрять комплексный подход, суть которого заключается в интеграции принципов трансформации системы управления промышленными отходами, внедрении алгоритма реверсивной логистики, основных составляющих организационно-экономического механизма (функций, методов, средств управления, информационных систем, цифровых, зеленых и инновационных технологий), финансовых инструментов зеленого инвестирования для реализации региональной стратегии управления промышленными отходами.

Внедрение предложенного комплексного подхода будет способствовать принятию обоснованных инновационных решений по экологизации логистической деятельности и

*экологическому менеджменту; своевременному решению проблем по управлению обратными потоками отходов производства с применением принципов реверсивной логистики; минимизации негативного влияния на окружающую среду за счет сокращения объема образования отходов, увеличения объема переработки и повторного использования промышленных отходов; действенному внедрению моделей циркулярной экономики, переходу к расширению ответственности производителей; повышению уровня экологической безопасности региона и страны; достижению целей устойчивого развития национальной экономики.*

*Установлено, что для совершенствования системы управления промышленными отходами в регионе целесообразно: внедрение новейших технологий и оборудования для сбора, сортировки, транспортировки, переработки и утилизации отходов с учетом передовой европейской практики; содействие использованию рециклинга отходов в качестве вторичного сырья на основе «зеленого» инвестирования; разработка финансового механизма применения государственно-частного партнерства на основе привлечения частных инвестиций и других внебюджетных источников финансирования в сфере управления промышленными отходами; создание соответствующей кластерной структуры как организационной формы партнерства в области управления промышленными отходами; разработка и внедрение инструментов экономического стимулирования утилизации промышленных отходов; реализация концепции реверсивной логистики в контексте зелёной и циркулярной экономики.*

**Ключевые слова:** национальная экономика, окружающая среда, промышленные отходы, управление промышленными отходами, региональная система управления отходами, инфраструктурное обеспечение, иерархия управления отходами, рециклинг отходов, реверсивная логистика, экологические основы, зеленая экономика, циркулярная экономика, устойчивое развитие, трансформация, зеленое инвестирование технологии, комплексный подход, логистическая инфраструктура, кластерная структура, синергетический эффект.

**Introduction.** In modern conditions, the established regional industrial waste management systems in Ukraine are not effective enough. This is due, first of all, to the imperfection of the institutional support for the implementation of the waste management mechanism (processes of collection, transportation, storage, processing, disposal, removal, disposal and burial), which leads to an increase in the volume of their accumulation; lack of means of waste management; low level of implementation of low-waste technologies and creation of logistics infrastructure and corresponding cluster structures for waste management; insufficient volume of investments in industrial waste recycling; negative consequences of Russian aggression against Ukraine.

At the same time, it should be noted that there is a lack of theoretical and methodological foundations for the formation of regional waste management

systems in Ukraine in the conditions of European integration and decentralization of power, methods of analysis of the process of generation and utilization of industrial waste in regional ecosystems, methodical approaches to determining factors influencing the functioning of the logistic infrastructure of waste recycling and criteria for its improvement creates problems in the formation of scientifically based development of regional industrial waste management plans. All this has a negative impact on the current state of the natural environment and leads to an increase in environmental load, possible environmental risks, and thereby reduces the level of environmental safety in the regions of Ukraine.

Therefore, it is expedient to change the modern paradigm of environmental thinking and environmental policy, search for innovative tools, "green" and logistical solutions, substantiate the theoretical and methodological foundations and develop

scientific and applied proposals, as well as introduce fundamentally new organizational, economic and management approaches and "green" technologies to improve the functioning of the regional industrial waste management system in the context of the concepts of circular economy and balanced sustainable development. Let's consider it on the example of the Kyiv region.

At present, the implementation of an ecologically balanced system of nature management and preservation of natural ecosystems, the development of a regional Concept and Strategy for the management of industrial waste, the introduction of innovative waste recycling technologies, the use of public-private partnership as an effective mechanism for the functioning of logistics infrastructure are recognized as priority tasks for the effective implementation of environmental policy in the Kyiv region. Leveling of environmental risks from the negative impact of logistics activities on the environment, etc. This corresponds to the main provisions of the National Waste Management Strategy in Ukraine until 2030, the State Regional Development Strategy for 2021-2027, the National Waste Management Plan until 2030 within the framework of the implementation of the Framework Directive 2008/98/EU "On Waste", Directive 1999/31/EC "On waste disposal", 2000/53/EC (End-of-life vehicles, ELV) Recycling, 2006/21/EC "On waste management of mining enterprises", 2012/19/EC "On electrical and electronic equipment waste (WEEE)" and the Association Agreement between Ukraine and the European Union.

**Literature and researches review.** The issues of modernization of the industrial waste management system and the corresponding logistics infrastructure are regulated by a number of legislative and normative legal acts (with amendments), among them: the Law of Ukraine "On Protection of the Natural Environment" dated June 25, 1991 No. 1264-XII; Law of Ukraine "On Radioactive Waste Management" dated June 30, 1995 No. 255/95-VR; Law of Ukraine

"On Waste" dated March 5, 1998 No. 187/98-VR; Law of Ukraine "On the Nationwide Targeted Environmental Program for the Management of Radioactive Waste" dated September 17, 2008 No. 516-VI; Law of Ukraine "On Public-Private Partnership" dated July 1, 2010 No. 2404-VI; Law of Ukraine "On Environmental Impact Assessment" dated May 23, 2017 No. 2059-VIII; Decree of the Cabinet of Ministers of Ukraine "On the approval of the National Waste Management Strategy in Ukraine until 2030" dated November 8, 2017 No. 820; Decree of the Cabinet of Ministers of Ukraine "On approval of the National Waste Management Plan until 2030" dated February 20, 2019 No. 117-p; Resolution of the Cabinet of Ministers of Ukraine "On Approval of the State Strategy for Regional Development for 2021-2027" dated August 5, 2020 No. 695; Order of the Ministry of Environmental Protection and Natural Resources of Ukraine "On Approval of Methodological Recommendations for the Development of Regional Waste Management Plans" dated September 10, 2021 No. 586; Regional development strategies for the period until 2027, etc.

The problems of transformation of regional industrial waste management systems using the principles of green economy are of constant interest to scientists and practitioners. As the analysis of literary sources shows, a significant number of scientific works of scientists are devoted to the justification of scientific and methodological approaches to waste recycling and the improvement of regulatory, legal, institutional, organizational, economic, financial and information support for industrial waste management, such as: R. Marshall, K. Farahbakhsh [1]; A. Bartoleto [2]; I. Koblianska [3]; T. Safranov, M. Klymenko et al. [4]; V. Mishchenko, Yu. Makovetska, T. Omelianenko [5]; H.-C. Brauweiler, V. Shkola, O. Markova [6]; T. Halushkina et al. [7]; T. Antonova [8]; N. Pinkevich [9]; R. Timchenko, D. Krishko, Ye. Titunin [10]; O. Kononenko, V. Molodyka [11]; O. Kravchenko et al. [12]; I. Kolodiichuk [13]; V. Yevdokymenko [14]; O.

Minina, N. Shadura-Nykyporets [15]; V. Plokhyy [16]; M. Barinov et al. [17]; M. Melnykova, V. Shkryhun, N. Khazanova [18]; R. Naboka [19]).

In the scientific literature, there are many approaches to considering the environmental component of logistics (Z. Jianwei, Z. Minjie, Z. Liwei [20]; S. Pulawska, W. Starowicz [21]; L. Simão, M. Gonçalves, C. M. T. Rodriguez [22]; M. Moroz, Z. Polkowski [23]; I. Urbanyi-Popiołeka [24]; W. Liu et al. [25]). It should be noted that research by international consulting companies confirms the relevance of green logistics development issues. As a result of research, foreign (S. Luthra, D. Garg, A. Haleem [26]; C. Geiger [27]; F. Barzinpour, P. Taki [28]; C. Pierre, P. Francesco, N. Theo [29]) and domestic (A. Mazaraki, L. Kharsun [30]; T. Kobylinska [31]; Yu. Sahaidak, T. Kharchenko [32]) scientists established that the evolution of the development, establishment, formation and further structuring of green logistics are closely intertwined with logistic principles.

Researchers (D. Rogers, R. Tibben-Lembke [33]; S. Dowlatshahis [34]; S. Srivastava [35]; D. Lee, M. Dong [36]; F. McLeod et al. [37]; M. Starostka-Patyk, V. Popa [38]; A. Mesjasz-Lech [39]) pay considerable attention to the substantiation of the conceptual provisions of the development of reverse logistics in the circular economy system.

In recent years, scientists (J. Coyle et al. [40]; D. Bowersox, D. Closs [41]; Ye. Krykavskyy et al. [42; 43]; O. Bondarenko [44]; A. Hlaskova [45]; O. Karyi, H. Podvalna [46]; O. Sumets, T. Babenkova [47]; I. Blahun, I. Nychyk [48]; N. Smyrnova [49]; I. Sadchykova [50]) have been actively engaged in solving the urgent problems of the formation and functioning of logistics infrastructure in the context of ensuring the sustainable development of the national and regional economy.

Despite the wide range of scientific developments on the chosen topic, further scientific research on the formation of the logistics infrastructure of industrial waste management, taking into account the regional characteristics of the Kyiv region, is

timely and relevant. For quality monitoring of the environment, finding ways to solve the problem of increasing the level of environmental safety, it is advisable to perform an analytical assessment of the current state of development of the industrial waste management system in the Kyiv region. And this problem acquires special importance in the modern conditions of transformation of the regional logistics system and creation of appropriate infrastructure (for example, cluster formations) in the context of the European Green Deal.

**Aim and objectives.** *The purpose of this article* is to study the development trends of the regional industrial waste management system on the example of the Kyiv region; identification of modern problems of formation of proper regional logistics infrastructure; substantiation of the feasibility of applying a comprehensive approach to infrastructural provision of industrial waste management in the context of the strategy of recovery of the national economy of Ukraine.

**The methodological basis of the research** is the provisions of theories of sustainable and regional development, concepts of green and circular economy. Research of modern processes of formation of waste management systems is based on the use of methods: economic-statistical analysis, balance, modeling, analogies and synthesis, system approach, comparisons and observations, classification, structural-logical generalization, etc.

Scientific provisions, conclusions and recommendations are based on fundamental theoretical developments on the formation of waste management systems at the regional level. The basis of the study was the achievements of modern economic science, scientific works of leading domestic and foreign scientists and practitioners in the field of waste recycling, nature management, problems of ensuring sustainable development of territories and finding new ways to achieve it, in particular, through waste management.



**The information base of the research** was: legislative and regulatory acts of Ukraine, Development Strategy of the Kyiv Region for 2021-2027, Regional Waste Management Plan of the Kyiv Region until 2030, official materials of the State Statistics Service of Ukraine and the Main Department of Statistics in the Kyiv Region, Ministry of Environmental Protection and natural resources of Ukraine, the Ministry of Development of Communities and Territories of Ukraine, scientific publications of foreign and domestic scientists.

**Results, analysis and discussion.** Statistical analysis shows that the total volume of emissions of pollutants and greenhouse gases into the atmospheric air in the Kyiv region increased by 33.3% during 2000-2020 due to an increase in emissions by mobile sources by 80.9%. However, the volume of emissions of pollutants and greenhouse gases into the atmosphere by stationary sources decreased by 17.7% (Table 1).

Table 1 – Dynamics of emissions of pollutants and greenhouse gases into the atmosphere by stationary and mobile sources

Years	Total volume, <i>thousand tons</i>	Including sources, <i>thousand tons</i>	
		stationary	mobile
2000	167.5	80.8	86.7
2005	170.0	73.0	97.0
2006	201.9	108.3	93.6
2007	251.3	93.3	158.0
2008	289.8	107.4	182.4
2009	266.7	101.9	164.8
2010	269.0	106.8	162.2
2011	278.6	113.6	165.0
2012	308.0	129.4	178.6
2013	277.3	111.9	165.4
2014	252.1	96.2	155.9
2015	203.6	78.1	125.5
2016	210.2	98.2	112.0
2017	162.0	48.2	113.8
2018	197.0	81.3	115.7
2019	214.7	84.4	130.3
2020	223.3	66.5	156.8

Source: compiled according to the data of the Main Department of Statistics in the Kyiv region.

Investigating the development of the regional industrial waste recycling system, it was established that the amount of generated waste decreased by 26.6% in 2020 compared to 2010, and the amount of waste disposed of decreased by 98.6%. It is worth noting that in the Kyiv region there is a trend of significant growth in the ratio between the volumes of generated and disposed of waste. Thus, the

value of this indicator increased in the region for 2010-2020 from 2.3 to 118.3 times. The volume of removed industrial waste to specially designated places or facilities decreased by 2.2%. The volumes of waste accumulated during operation in specially designated places or objects in the region increased by 2.6 times (Table 2).

Table 2 – Indicators of the development of the waste recycling system

Years	Volumes of waste, thousand tons			
	formed	disposed	removed to specially designated places or facilities	accumulated during operation, in specially designated places or objects (waste disposal sites)
2010	2932.2	1296.9	1715.6	37042.0
2011	6626.3	952.4	5070.4	41489.6
2012	3015.9	571.1	1736.8	40335.4
2013	2427.8	536.5	1578.2	41702.5
2014	1272.1	94.4	1417.7	41502.9
2015	1660.5	127.3	1283.6	44171.5
2016	1561.3	53.9	1393.2	45429.3
2017	1265.6	20.2	1131.7	43140.0
2018	1394.0	33.8	1348.4	45499.1
2019	1414.6	9.7	1535.9	46710.8
2020	2153.6	18.2	1677.7	95588.2

Source: compiled on the basis of information materials of the Main Department of Statistics in the Kyiv region; of the "Environment" section of the official website of the State Statistics Service of Ukraine.

According to the analysis of information and analytical materials, the volume of waste generated from the economic activity of enterprises in the Kyiv region increased by 3.4

times during 2017-2020, and their specific weight in the total volume of generated waste increased by 45.5 percentage points (Table 3).

Table 3 – Dynamics of the amount of generated waste by types of economic activity

Indicators	Years			
	2017	2018	2019	2020
Total volume, <i>thousand tons</i>	1265.6	1394.0	1414.3	2153.6
Waste from the economic activity of enterprises, <i>thousand tons</i>	593.1	739.4	950.7	1990.1
Share in the total volume, %	46.9	53.0	67.2	92.4

Source: compiled on the basis of information materials of the Main Department of Statistics in the Kyiv region; of the "Environment" section of the official website of the State Statistics Service of Ukraine.

It should be noted that the situation with investing in the development of the waste management system in the Kyiv region is significantly deteriorating. This is evidenced by the low share of capital investments for waste management in the entire region. This was especially observed in 2011, 2012, 2014, 2015. Only in 2019 did the situation improve somewhat – the value of this indicator was 65.7%, which is 49.8 percentage points higher compared to 2010. The share of capital

investments for waste management decreased by 11.3% in 2010-2020 or from 15.9 to 4.7% of the total amount of capital investments for environmental protection for all types of environmental protection activities. However, during this period, the specific weight of capital investments for atmospheric air protection and climate change problems increased by 5 percentage points (Table 4).

Table 4 – Dynamics of capital investments by types of environmental protection activities

Years	The total volume of capital investments (in actual prices), thousand UAH	Including the main types of environmental protection activities			
		protection of atmospheric air and problems of climate change		waste management	
		thousand UAH	share, %	thousand UAH	share, %
2010	53446.6	6622.3	12.39	8520.2	15.94
2011	1398332.6	63679.9	4.55	20979.8	1.50
2012	1948849.6	18509.3	0.95	14690.7	0.75
2013	1863334.7	122331.2	6.57	56975.1	3.06
2014	3789621.1	11051.3	0.29	16568.3	0.44
2015	4157510.7	1945.7	0.05	17137.7	0.41
2016	8313266.1	3005.7	0.04	1387819.6	16.69
2017	4088520.9	5800.8	0.14	1132136.3	27.69
2018	1773634.6	5384.7	0.30	148779.1	8.39
2019	6945708.4	6300.2	0.09	4560371.1	65.66
2020	285410.3	49541.8	17.36	13382.5	4.69

Source: compiled on the basis of information materials of the Main Department of Statistics in the Kyiv region; of the "Environment" section of the official website of the State Statistics Service of Ukraine.

Statistical analysis shows that the share of current costs for waste management in 2020 was 35.8% of current costs for environmental protection for all types of environmental protection measures, or 10.6 percentage points more compared to 2010. The specific weight of current costs for protection atmospheric air and the problem of climate change decreased during this period by 2.7 percentage points. (Table 5).

Based on the analysis of the approved Development Strategy of the Kyiv region for 2021-2027, it was found that the program document does not pay enough attention to the formation of the regional logistics infrastructure for industrial waste management, which would meet the modern requirements of management. At the same time, the main weaknesses of the Kyiv region include:

- technologically and morally outdated industrial waste management system, insufficient level of their disposal;
- low indicators of the use of industrial waste as secondary raw materials in the context of the circular economy;
- insufficiently effective implementation of measures aimed at preventing the

formation, utilization, disposal and removal of waste;

- lack of a comprehensive approach to managing the recycling of industrial production waste by creating an appropriate logistics infrastructure based on the principles of the green economy.

However, as a result of the research, strengths were also revealed. So, currently active work is being done in the Kyiv region to increase the level of environmental safety. For this purpose, the Regional Waste Management Plan until 2030 (Table 6) is being developed, which provides for the implementation of the waste management system on an innovative basis.

So, as the comparative analysis of strategic documents showed, environmental safety and protection of the natural environment are among the priority areas. At the same time, it should be emphasized that only in the Regional Development Strategy until 2027 are defined waste management tasks, including: support for innovative developments and the introduction of the latest technologies in the field of waste processing and the return of resource-valuable materials to economic circulation; environmental monitoring and informing the

population about the state of the environment; creation and development of eco-networks.

Table 5 – Dynamics of current costs by types of environmental protection activities

Years	Total current costs (in actual prices), <i>thousand UAH</i>	Including the main types of environmental protection activities			
		protection of atmospheric air and problems of climate change		waste management	
		<i>thousand UAH</i>	share, %	<i>thousand UAH</i>	share, %
2010	239400.7	13517.8	5.65	60267.9	25.17
2011	313066.6	15095.3	4.82	90156.3	28.80
2012	357943.1	13273.4	3.71	82502.1	23.05
2013	408651.6	15446.7	3.78	107300.2	26.26
2014	428268.4	13784.2	3.22	114531.3	26.74
2015	489315.8	13430.4	2.74	132640.9	27.11
2016	601143.6	15290.7	2.54	167882.2	27.93
2017	879681.3	15789.8	1.79	383896.4	43.64
2018	766594.9	20419.1	2.66	245918.7	32.08
2019	965021.2	19589.0	2.03	309370.0	32.06
2020	1122821.1	34124.7	3.04	401815.2	35.79

Source: compiled on the basis of information materials of the Main Department of Statistics in the Kyiv region; of the "Environment" section of the official website of the State Statistics Service of Ukraine.

Table 6 – List of measures to create waste management infrastructure

Name of the event and deadlines	Amounts of financing, <i>million UAH</i>		Sources of funding			
	2025	2030	<i>State budget</i>	<i>Regional budget</i>	<i>Local budget</i>	<i>Other sources</i>
Development of project documentation for the construction and reconstruction of waste management facilities (2021-2030)	55.0	55.0	-	-	55.0	-
Construction of regional waste management facilities (2023-2030)	350.0	700.0	-	50.0 50.0	-	300.0 650.0
Reclamation of landfills and landfills (2021-2030)	*	*				

Note: \* the amount of funding will be determined in a two-year period after conducting an inventory of landfills and landfills.

Source: compiled on the basis of the project of the Regional Waste Management Plan of the Kyiv Region until 2030.

As a result of the conducted researches [51-60], it was established that for the effective functioning of the logistics infrastructure of industrial waste management (IWM) in the Kyiv region in the context of the paradigms of "green" growth,

circular economy and sustainable development, it is advisable to apply a complex approach (Figure). Its essence consists in the integration of the principles of transformation of the industrial waste management system, the implementation of

the reverse logistics algorithm, the main components of the organizational and economic mechanism (functions, methods, management tools, information systems, digital, "green" and innovative technologies),

financial instruments of green investment for the implementation regional industrial waste management strategy.

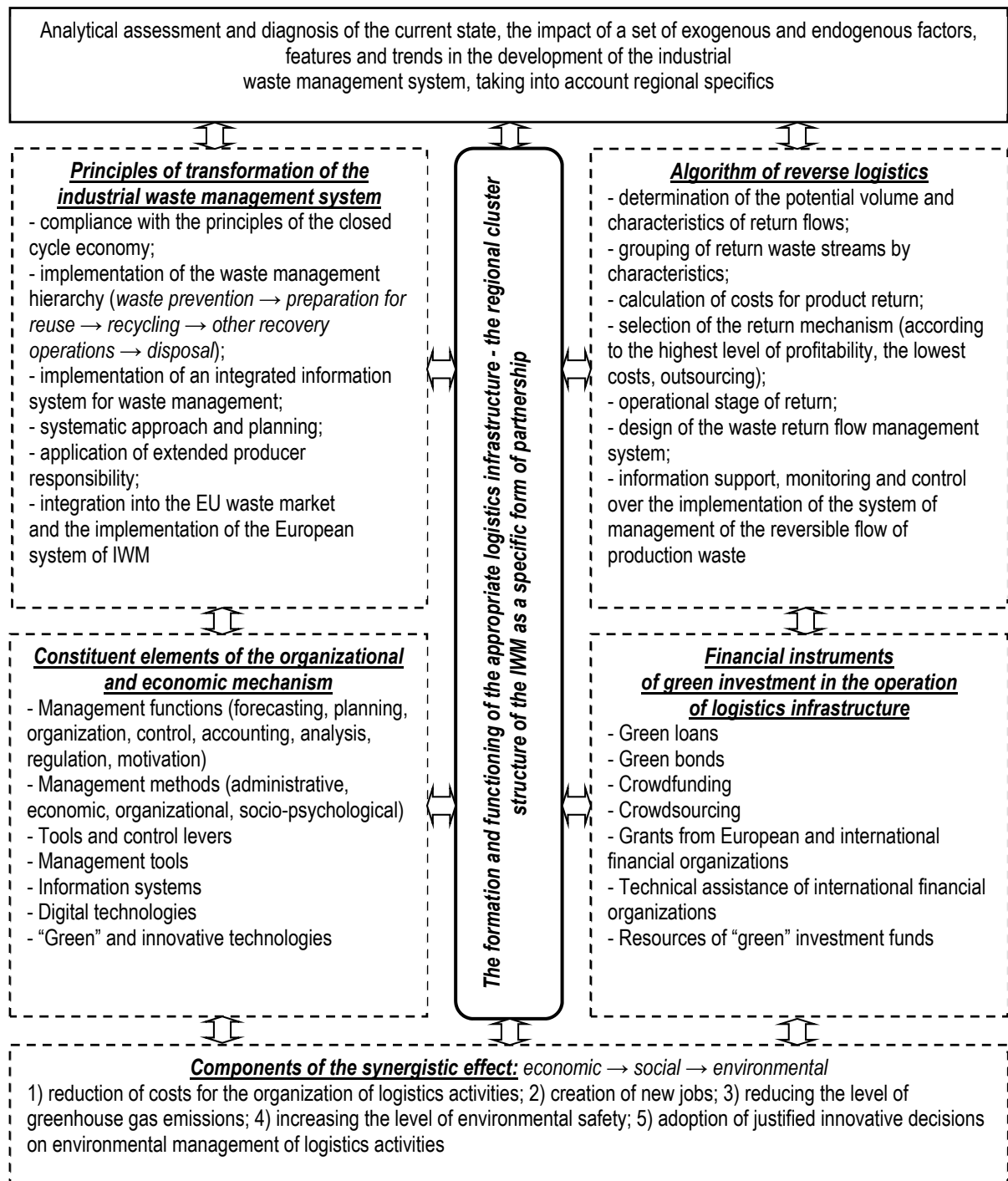


Figure 1 – A complex approach to infrastructural provision of industrial waste management

Source: author's development.

The implementation of the proposed integrated approach will contribute to the adoption of well-founded innovative

decisions on the greening of logistics activities and environmental management; timely solution of problems of management

of return flows of production waste using the principles of reverse logistics; minimization of the negative impact on the environment by increasing the volume of processing and reuse of industrial waste; effective implementation of circular economy models, transition to expanding producer responsibility; increasing the level of environmental security of the region; achieving the goals of sustainable development.

**Conclusions.** Therefore, in modern conditions, waste should be considered as an economic category, which should be based on the fact that waste is an economic object, the management of which depends on regional development.

At present, the regional and local authorities of the Kyiv region need to pay attention to the development of the Comprehensive Waste Management Program and the finalization of the Regional Industrial Waste Management Plan until 2030 with the involvement of various categories of stakeholders.

However, it should be noted that the concepts of "industrial waste" and "production waste" are not clearly defined by the current legislation of Ukraine. In this regard, it would be appropriate to introduce these concepts into national legal documents. This, in turn, would make it easier to distinguish them from other types of waste and would ensure more effective implementation of legislation in the field of industrial waste management, including as a recycling of secondary resources. In addition, the terms "waste management", "waste management hierarchy", "waste recycling", "green investments", "mechanism of "green" financing" should be included in the current legal acts that regulate the issue of waste management. For this purpose, it is expedient to introduce amendments and additions to the Laws of Ukraine "On Waste", "On Protection of the Natural Environment", "On Environmental Impact Assessment", the National Waste Management Strategy in Ukraine until 2030, the National Waste

Management Plan until 2030, the Strategy development of the Kyiv region for 2021-2027, Regional waste management plan in the Kyiv region until 2030.

And also finalize and adopt the draft law "On waste management", in which to define the classification of waste depending on the types of economic activity, the principles and mechanism of implementation of the five-level hierarchy of waste management.

In order to improve the regional industrial waste management system, it is expedient to:

- implementation of the latest technologies and equipment for collection, sorting, transportation, processing and disposal of waste taking into account advanced European practices;
- promoting the use of waste recycling as secondary raw materials on the basis of "green" investment;
- development of a financial mechanism for the application of public-private partnership based on attracting private investments and other non-budgetary sources of financing in the field of industrial waste management;
- development and implementation of tools for economic stimulation of industrial waste utilization;
- implementation of the concept of reverse logistics in the context of the green and circular economy;
- creation of an appropriate cluster structure as an organizational form of partnership in the field of industrial waste management;
- finalization and approval of regional industrial waste management strategies in the context of recovery of the national economy of Ukraine.

**Prospects for further research** in this area are the substantiation and development of conceptual provisions for the formation of a cluster structure of industrial waste management in the regions of Ukraine, taking into account the specifics of their functioning, as well as the justification of a fundamentally new concept of industrial waste management

in the context of the strategy of restoring the national economy of Ukraine.

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## LOGISTIC APPROACH TO THE SEGMENTATION OF THE COMPANY'S CUSTOMERS AS A BASIS FOR THE FORMATION OF LOGISTICS SERVICES

**Karpun Olga, Marchuk Volodymyr.** *"Logistic approach to the segmentation of the company's customers as a basis for the formation of logistics services". The article defines the essence of the logistics customer service concept, as a component of the service process, which makes it possible to ensure the necessary level of the customers' needs satisfaction, while providing the minimum necessary level of costs and maximizing profit for the company.*

*It was determined that the basis of the formation of logistics customer service is their segmentation or differentiation. A classic logistic approach to the differentiation of customers can be considered their division using ABC-XYZ analysis. At the same time, ABC analysis is usually carried out based on the income brought by clients for a certain period of time, XYZ analysis is carried out according to the stability of relations with the client, that is, according to the number of orders placed by the client during the same period of time.*

*We proposed our own view on the direct process of dividing customers into groups A, B and C, which is based on the calculation of the "jump in share" of customer revenues. The advantage of the proposed approach is that customers with relatively equal importance to the company cannot fall into different categories, and customers with very different values of importance to the company cannot fall into the same category.*

*Another approach to customer differentiation based on customer profitability was also proposed and recommendations for servicing each customer group were made.*

*Thus, the correct segmentation of customers and assessment of the potential of each segment will allow building several different service strategies aimed at increasing the company's profits.*

**Keywords:** logistics service, customer segmentation, logistics approach to customer segmentation.

**Карпунь Ольга, Марчук Володимир.** *«Логістичний підхід до сегментації клієнтів компанії, як основа формування логістичного обслуговування». У статті визначено сутність поняття логістичного обслуговування клієнтів, як складової частини процесу обслуговування, яка дає*

можливість забезпечити необхідний рівень задоволення потреб різних категорій клієнтів за умови підтримки мінімально необхідного рівня витрат та максимізації прибутку для самої компанії.

Було визначено що основою формування логістичного обслуговування клієнтів є їх сегментації або диференціації. Класичним логістичним підходом до диференціації клієнтів можна вважати їх поділ за допомогою ABC-XYZ аналізу. При цьому ABC аналіз зазвичай проводять за доходами, які приносять клієнти за певний період часу, XYZ аналіз проводять за сталістю відносин з клієнтом, тобто за кількістю замовлень, розміщених клієнтом, за той же період часу.

Був запропонований власний погляд на безпосередній процес поділу клієнтів на групи А, В та С, в основі якого лежить розрахунок «стрибка питомої ваги» доходів клієнтів. Перевагою запропонованого підходу є те, що клієнти зі порівняно однаковими важливістю для компанії не можуть потрапити до різних категорій, а клієнти з дуже різними значеннями важливості для компанії не можуть потрапити до однієї категорії.

Також був запропонований ще один підхід до диференціації клієнтів, заснований на прибутковості клієнтів, та надані рекомендації щодо обслуговування кожної отриманої групи клієнтів.

Таким чином, правильна сегментація клієнтів і оцінка потенціалу кожного сегмента дозволять побудувати кілька різних стратегій обслуговування, спрямованих на збільшення прибутку компанії.

**Ключові слова:** логістичне обслуговування, сегментація клієнтів, логістичний підхід до сегментації клієнтів.

**Карпунь Ольга, Марчук Владимир. "Логистический подход к сегментации клиентов компании как основа формирования логистического обслуживания".** В статье определена сущность понятия логистического обслуживания клиентов как составной части процесса обслуживания, которая дает возможность обеспечить необходимый уровень удовлетворения потребностей различных категорий клиентов при поддержке минимально необходимого уровня затрат и максимизации прибыли для самой компании.

Было определено, что основой формирования логистического обслуживания клиентов является их сегментация или дифференциация. Классическим логистическим подходом к дифференциации клиентов можно считать их разделение посредством ABC-XYZ анализа. При этом ABC анализ обычно проводят на основе доходов, приносимых клиентами за определенный период времени, XYZ анализ проводят на основе постоянства взаимоотношений с клиентом, то есть по количеству заказов, размещенных клиентом, за тот же период времени.

Предложен собственный взгляд на непосредственный процесс разделения клиентов на группы А, В и С, в основе которого лежит расчет «скачка удельного веса» доходов клиентов. Преимуществом предлагаемого подхода является то, что клиенты со сравнительно одинаковой важностью для компании не могут попасть в разные категории, а клиенты с очень разными значениями важности для компании не могут попасть в одну категорию.

Также был предложен еще один подход к дифференциации клиентов, основанный на доходности клиентов, и даны рекомендации по обслуживанию каждой полученной группы клиентов.

Таким образом, правильная сегментация клиентов и оценка потенциала каждого сегмента позволят построить несколько разных стратегий обслуживания, направленных на увеличение прибыли компании.

**Ключевые слова:** логистическое обслуживание, сегментация клиентов, логистический подход к сегментации клиентов.

**Introduction.** In today's highly competitive market, the activities of companies completely depend on their customers. The latest approach to the construction of the main and supporting processes in companies assumes their client orientation. The rapid development of marketing and logistics, the active implementation of logistics concepts in the activities of companies contributed to the establishment of the idea that the process of satisfying demand in a more flexible and reliable way, which is based on the management of the consumer value chain for a specific client, can be a decisive factor for achieving success in the market. Such an approach is able to create clear opportunities for differentiation of a standard in all other products and to modernize the company's offer to meet the individual requirements of the client.

It is quite obvious that different consumers want to buy different goods and receive a different set of services. In order to satisfy these different needs, companies seek to identify groups of consumers with similar needs. Consumer segmentation consists in dividing them into relatively clear groups that need certain services and for which certain service strategies must be used. Segmentation is based on the analysis of customer characteristics. Almost all modern enterprises create a customer database, which makes it possible to structure markets and find consumers for a specific product or service offer. Classic marketing offers geographic or demographic segmentation, segmentation by gender and age, sometimes psychographic segmentation is used, etc. [1, 3, 7].

In practice, the most common segmentation of clients is by the number and volume of services consumed by the client. For example, software providers divide customers according to the frequency of acquisition of new versions of the software product and licenses; banks - by the number of banking products used by one client; automobile companies divide customers

according to the frequency of visits to branded service stations; the key parameter of client segmentation in an advertising agency is the client's annual advertising budget, etc. [2, 5, 8].

**Problem statement (formulation of research purposes).** However, existing marketing approaches to segmentation answer the question of product demand, but do not identify important customers. To determine the most attractive customers for the company, it is necessary to approach this issue in a different way.

Here it is appropriate to mention the well-known Pareto law (the 80:20 law), which in the context under consideration will look like this: 20% of customers bring the company 80% of the profit, and 80% of the customers bring the company only 20% of the profit. However, this does not mean that the last group of consumers should be completely abandoned. Although a more detailed analysis may reveal such a group of customers with whom further cooperation is undesirable.

The purpose of this article is to study the specifics of logistics service for the company's customers and develop recommendations for applying a logistics approach to the segmentation of the company's customers, which will give it the opportunity to obtain maximum profit while minimizing costs.

**The main material and results of the research.** Digitization of social life, availability of the Internet, social networks, etc. gives potential customers the opportunity to quickly compare the offers of several companies and choose the one that offers the best conditions in terms of price, quality and list of services. It is not surprising that companies are trying to improve these indicators: they constantly expand their product range, introduce additional services, conduct customer satisfaction surveys, and also try to lower prices or offer certain discounts.

However, sooner or later almost all companies that have followed this path face a new problem: the costs of customer service are increasing, and the revenues from them

are constantly decreasing. As a result, companies begin to work on the edge of profitability, and some even work at a loss. And this despite the fact that the number of customers is constantly growing, as are growing the sales volumes.

Such companies are most in need of a logistical approach to customer service. After all, it is known that the logistics approach is based on minimizing (or optimizing) costs and maximizing the profit of companies. From the point of view of logistics, the main question that the company must answer should be the following: "Should all customers be provided with high-quality service, expand the list of services and offer discounts?". It is quite obvious that different customers have different requirements for the quality of service, the set of services and the cost of these services. Therefore, the

customer service process should be approached differently.

Thus, the logistics approach to customer service (or logistics service) should be considered as an integral part of the service process, which makes it possible to ensure the necessary level of the customers' needs satisfaction, while providing the minimum necessary level of costs and maximizing profit for the company [based on 3, 4].

The formation of logistics service for the company's customers should take place according to the following stages (Fig. 1).

According to the given algorithm, the formation of logistics customer service begins with their segmentation or differentiation. That's why segmentation is a basis for the formation of logistics services.

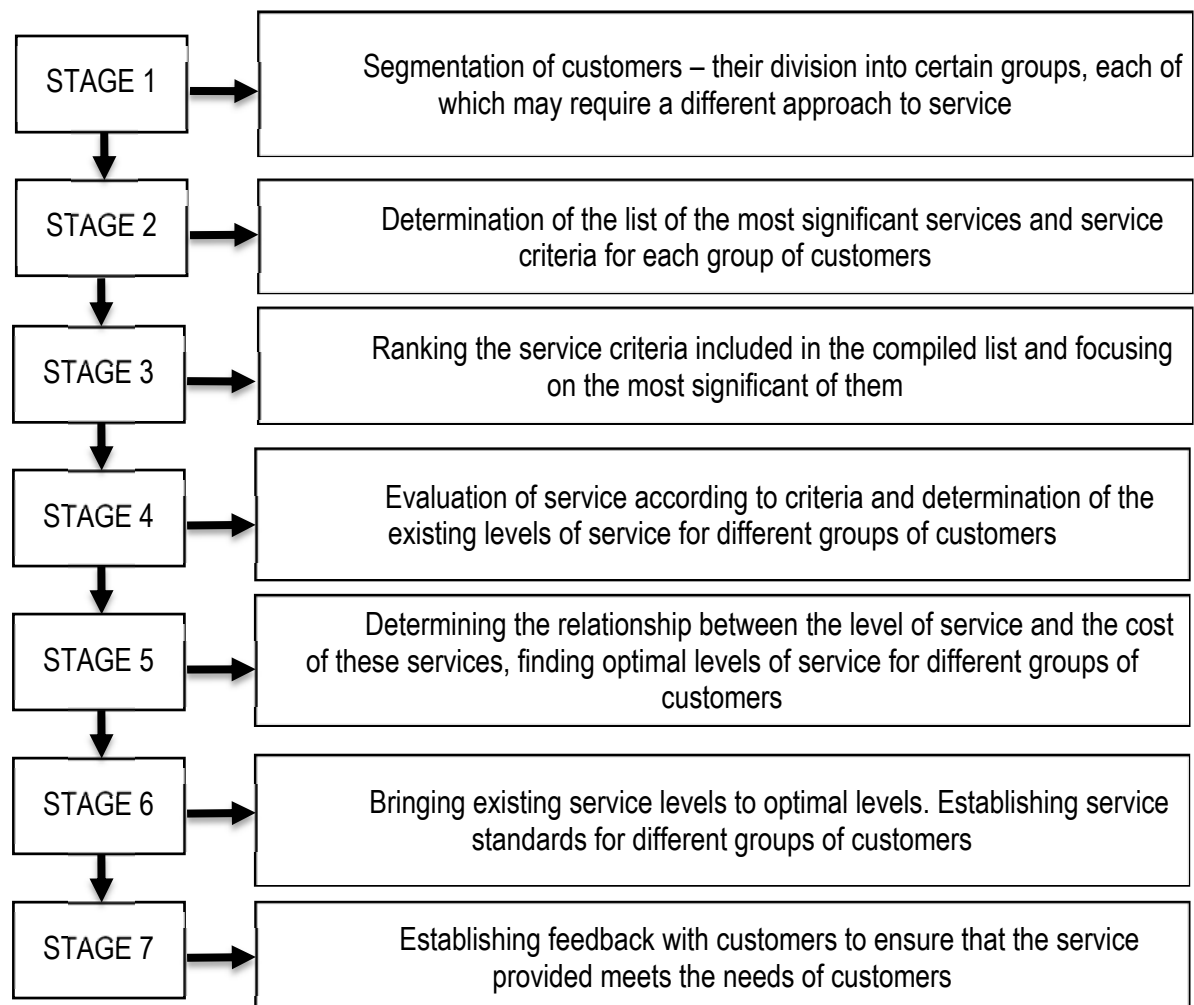


Figure 1 – Stages of formation of logistics customer service [based on 4]

A classic logistic approach to customer differentiation can be considered their segmentation using ABC-XYZ analysis. At the same time, ABC analysis is usually carried out based on the income brought by clients for a certain period of time, XYZ analysis is carried out according to the stability of relations with the client, that is, according to the number of orders placed by the client during the same period of time. This segmentation is considered in detail in the work [5, p.136-137].

ABC analysis is usually performed as follows:

1. The total amount of the company's revenue from all customers for a certain period of time is calculated.

2. The share (or specific weight) of each client in the company's total revenue is calculated.

3. Clients are sorted in order of decreasing their share in revenue.

4. The cumulative share for all the company's customers is calculated, on the basis of which the direct division into categories takes place:

- group A includes customers of the ordered list, which in total bring up to 80% of revenue. Ideally, it should be 20% of customers by number;

- group B includes the following clients of the ordered list, which in total bring 15% of revenue. Usually, 30% of the total number of customers should fall into group B;

- group C includes all other clients, which in total bring about 5% of revenue. Ideally, it should be 50% of the total number of customers.

However, as practical calculations show, the specified percentage ratio is very rarely observed in reality. We usually have situations where "up to 80% of revenue" comes from more than 50% of customers. And to assign them all to group A is not correct, neither from the point of view of logic, nor from the point of view of further cost optimization. After all, customers of group A must really be very important for the company and bring the lion's share of revenue. According to the above division, clients with completely

different share in the company's revenues can fall into group A.

That is why we offer our own view on the direct process of dividing customers into groups A, B and C. The basis of our vision regarding the division of customers into categories is the calculation of the "jump of share", i.e. the difference between the specific weights of the previous and the next customer, according to the ordered list.

Thus, item 4 of the ABC analysis algorithm is proposed to be carried out as follows:

4. The jump in the specific weight of customers is calculated as the difference between the share of the previous and the next customer, according to the ordered list. "0" is placed opposite the last client, because he does not have the next customer. The values of the obtained jumps are compared and found the largest among all. It is proposed to divide clients into groups A, B and C as follows:

- group A includes customers of the ordered list, starting from the most profitable to the first maximum (or large) value of the jump of share, inclusive. At the same time, it should be remembered that group A should have the smallest number of customers;

- group B includes the following customers of the ordered list up to the second maximum (or large) value of the jump of share, inclusive. It is desirable that group B is larger than group A in terms of the number of customers;

- group C includes those customers who remained at the bottom of the ordered list. Usually, group C will have the largest number of customers.

It should be noted that customers with relatively similar specific weights cannot fall into different categories, and customers with very different specific weight values cannot be in the same category.

Another feature of the proposed approach is that there may be more than 2 "big jumps of share". Therefore, the division of customers may not be into 3 groups: A, B and C, but even more: A, B, C, D, E, etc. This approach really allows to group more or less



the same customers in terms of importance for the company. Therefore, in the future, it will be possible to offer them the most suitable service conditions.

The main thing to remember is that an increase in the number of customer groups will lead to an increase in possible strategies for working with them, and therefore to an increase in costs. Therefore, when dividing customers into more than 3 groups, it is important to find a compromise between the desire for better service differentiation and possible additional costs.

We suggest leaving the approach to division into XYZ groups unchanged. Usually

XYZ is conducted taking into account the stability of the relationship with a certain customers:

- group X includes customers whose relationships are stable and easily predictable ( $0\% < v \leq 10\%$ );
- group Y includes customers with whom relationships have certain fluctuations ( $10\% < v \leq 25\%$ );
- group Z includes customers with whom relationships are random ( $v > 25\%$ ).

Where  $v$  is the coefficient of variation of relationships with certain customers, which is calculated according to the formula [5]:

$$v = \frac{\sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n}}}{\bar{x}} \times 100\% , \quad (1)$$

where  $x_i$  – the number of transactions with a certain customer in the  $i$ -th period;  $\bar{x}$  – the average number of transactions with a certain customer over all periods;  $n$  – number of periods.

The ABC-XYZ matrix of the analysis will look slightly different as a result (Fig. 2). As for the existing recommendations on the matrix (see [5, p.137]), they should be supplemented with the following:

Customers included in groups AX, AY and AZ are the clients who bring the company the most revenue. These customers should be served at the highest level, develop individualized service programs, provide discounts and try to win their loyalty. For the customers of AZ group, it is necessary to identify the causes of such excessive fluctuations in product consumption and create all the conditions for its stabilization.

Customers who fall into groups BX, BY, BZ, CX, CY and CZ bring average revenue for the company. Their servicing should be carried out using additional services and create conditions for increasing income from

them. For customers of the BZ and CZ groups, it is also necessary to identify the causes of excessive fluctuations in product consumption and trying to eliminate them. But, unlike customers of category A, it is necessary to control that these additional measures are not unprofitable for the company.

Customers of groups DX, DY, DZ, EX, EY and EZ are the clients that bring the least revenue. It is necessary to minimize the costs of their servicing and to provide only the minimum necessary list of services at the minimum price. Discounts and loyalty programs should not be provided for these customers. Exceptions can be made only for customers of DX and EX groups, who can become a source of "word of mouth" and therefore indirectly be useful for the company. For customers of categories DZ and EZ, it is necessary to constantly monitor the costs of their service. And if expenses exceed income, company should refuse to cooperate with them, especially this applies to clients of the EZ group.

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
<b>X</b>	The highest revenue from customers / High stability of relations	High revenue from customers / High stability of relations	Average revenue from customers / High stability of relations	Low revenue from customers / High stability of relations	The lowest revenue from customers / High stability of relations
<b>Y</b>	The highest revenue from customers / Average stability of relations	High revenue from customers / Average stability of relations	Average revenue from customers / Average stability of relations	Low revenue from customers / Average stability of relations	The lowest revenue from customers / Average stability of relations
<b>Z</b>	The highest revenue from customers / Low stability of relations	High revenue from customers / Low stability of relations	Average revenue from customers / Low stability of relations	Low revenue from customers / Low stability of relations	The lowest revenue from customers / Low stability of relations

Figure 2 – Matrix ABC-XYZ analysis of the company's customers

In general, customers of group A should be served first, customers of group B second, then customers of groups C and D, and customers of group E (especially EZ clients) should be served last (on a residual basis).

It should also be noted that the use of only ABC-XYZ analysis for customer segmentation turned out to be somewhat limited, because it only takes into account the revenue from customers and does not take into account the costs of their service. The first attempts to find certain dependencies between these categories were made in works [1] and [5, c.138-139].

However, the practical implementation of these approaches turned out to be somewhat complicated, due to the lack of a clear boundary between "low costs" and "high costs", as well as "low sales volumes" and "high sales volumes".

In addition, as calculations carried out at specific enterprises showed, sometimes customers with "high sales volumes" and "high costs" became the most profitable customers, and therefore it would be logical to assign them to the category "Save", and not to the "Cost engineer" category.

Thus, we proposed a different approach to customer differentiation, based on customer profitability [6].

Unfortunately, to date, there is no approved methodology for calculating the profitability of each customer of the company. That is why we offer our own vision

of solving this issue, which can become the basis for further development of the specified methodology.

So, our proposals are based on the traditional method of calculating operating profit, which is equal to the difference between revenue and expenses. The revenue that the company receives from each customer for a certain period of time is a known value, which we have already used above when conducting ABC analysis.

As for expenses, the first stage should be the allocation of such component costs that directly affect the process of customer service. As an example, we suggest considering two components of costs that are present in any company, and which can be easily isolated from financial statements:

1. Salary expenses of personnel who directly participate in customer service.
2. Costs of communication with customers: telephone calls, advertising mailings, negotiation costs for concluding contracts (they can be converted into a monetary equivalent due to the cost of 1 employee's labor time), etc.

The second stage is the division of the specified costs for each customer separately.

1. Salary expenses. Division of these costs per 1 client can occur in two ways:

- if in the company there is no binding of a specific employee to the service of specific customers (that is, the employees serve all customers, regardless of their order),

then the salary expenses of the staff should be divided evenly to all customers. To do this, it is necessary to divide the total salary for the studied period by the total number of clients served;

- if in the company there is a connection of a specific employee to the service of specific clients (by types of clients, by types of services, by regions of service, etc.), then the salary of each employee should be divided evenly among all clients he serves.

Thus, revenue from customers should at least compensate for salary expenses of employees.

2. Costs of communication. We propose to calculate the costs of communication with each customer depending on the number of orders as follows:

- it is necessary to calculate the total number of orders from customers (for the entire period for all customers);

- it is necessary to determine the cost of 1 order (divide the total costs of communications for the considered period by their total number);

- it is necessary to determine the total number of orders for each customer for the considered period;

- it is necessary to multiply the total number of orders from each customer for the considered period by the cost of 1 order.

Of course, with this approach there is an assumption that every customer contact necessarily becomes an order from the customer. In real life, this is not always the case, because there may be several previous contacts before a direct order. In addition, customer contacts may not become an order at all. These factors can be taken into account by introducing certain coefficients.

The total costs of servicing 1 client in result consist of the salary expenses of staff who served clients, calculated per 1 client and the costs of communication with him.

As a result, the profitability of each customer is defined as the difference between the revenue that the customer brought for the considered period and the total costs of his service for the same period.

Next, it is necessary to rank customers in order of decreasing profitability (from the highest to the lowest). Based on this ranking, we propose to distinguish three categories of customers:

- profitable customers – clients who, according to calculations, are currently making a profit ( $\text{profit} > 0$ );

- contingently profitable customers – clients who are currently unprofitable, but under certain conditions (a slight decrease in service costs or an increase in revenue from them) can become profitable ( $\text{profit} \leq 0$ );

- unprofitable customers – clients who, according to calculations, currently bring a significant loss to the company ( $\text{profit} \ll 0$ ).

The main question that will arise after calculating the profitability of customers will be "What to do with unprofitable customers?" Of course, no company wants to lose existing customers. Although, as research and calculations have shown, sometimes up to 50% of the company's customers are unprofitable. Usually, the management of the company does not see these unprofitable customers, because the most profitable ones can cover their losses. In this case, profitable clients act as "sponsors" for servicing unprofitable clients.

Therefore, first of all, it is necessary to answer the question: "Are unprofitable customers strategically important for the company?" Strategically important can be customers who create the image of the company, important for the company due to its own interests, or customers with whom cooperation has just begun and which may become profitable in the future. But, if the unprofitable customers identified do not belong to the "strategically important" category, the company should seriously consider the feasibility of further cooperation with them. After all, these customers are so-called "resource killers" and simply refusing to cooperate with them can bring more profit to the company than providing them with services.

Of course, the proposed method is easier to apply in B2B relations, that is, when the company's customers are not end consumers, but a certain business environment of the company. In this case, the number of customers is usually not as large as in B2C relationships (when the number of clients can be millions), the relationship is more or less permanent in nature, they can be analyzed over time, and a constructive dialogue can be established with clients. However, with some adaptation, the proposed method can be used in B2C relations, when customers are the end consumers of products or services. Especially when today almost all companies implement electronic databases in their activities, which provide reliable information about what the customers buy, how often, which promotions they don't respond to, etc. As a result, such data is a powerful tool for personalizing customer service, and therefore the application of a logistics approach.

**Conclusions.** The correct segmentation of customers and assessment of the potential of each segment allows building several different service strategies aimed at increasing profits due to:

focusing attention on existing customers instead of trying to attract new ones (because

the costs of servicing new customers are usually much higher than servicing existing customers);

retention of "profitable" customers and reduction of costs for "unprofitable" ones (for example, a reduction in advertising aimed at a "non-profitable" group of consumers);

development of specialized offers for each group of customers, based on the volume of sales to this group, costs for its servicing and production of goods and services for it;

introduction of an effective policy of interaction with consumers, which implies a clear understanding of which consumers the company intends to retain and how it can do it;

implementation of CRM (Customer Relationship Management) system for managing interaction with the consumer;

strengthening the training of personnel directly in contact with the client.

Thus, by classifying their customers, companies will have the opportunity to offer a more individualized package of products with accompanying and additional services, make a more correct choice regarding the need for customer retention, minimize the possibility of error and increase their profitability.

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## **MANAGEMENT OF INTER-FIRM COOPERATIVE RELATIONS WITH THE EXCHANGE OF INNOVATIONS BY ENTERPRISES OF UKRAINE**

**Serhii Kolodinskyi, Oleksii Hutsaliuk, Serhii Kramskyi.** «*Management of inter-firm cooperative relations for the exchange of innovations by enterprises of Ukraine*». The article deals with issues of development and introduction of innovative developments by Ukrainian enterprises. The categories "innovation" and "innovation process" are defined, the categorical features of economic indicators are indicated. The content of interfirm cooperative relations between enterprises regarding the transfer of innovative products is given. Definitions of the most significant and promising innovative products in the practical activity of manufacturing enterprises are given, which primarily include intellectual property objects, namely inventions, patents, know-how, trademarks and industrial designs. Along with material products, scientific and technical services are becoming especially widespread. The role of the latter is growing together with the transfer of technologies, which are practically tied to services of this kind, such as engineering, outsourcing, consulting and a complex of services before and after the sale of innovative products. The management of inter-company cooperative relations includes a number of such types of intellectual relations between specialists and manufacturers as scientific conferences, exhibitions, fairs, forums, personal professional contacts for the purpose of transferring knowledge, experience and joint developments in various research and design works. Such close cooperation of scientists and practitioners allows to produce high-tech products of various levels of complexity and to use a special technology transfer mechanism, which is the conclusion of

*license agreements. Licenses allow, on mutually beneficial terms, to use the achievements of scientific and technical progress and to attract a large number of interested parties both in the field of science and in the fields related to the application of scientific and technical developments in production into inter-company cooperative relations.*

**Keywords:** inter-company cooperative relations, innovation, innovation process, types of innovative products, knowledge-intensive goods, technology transfer, patent, license, know-how, license, engineering, outsourcing, consulting.

**Сергій Колодинський, Олексій Гуцалюк, Сергій Крамський. «Менеджмент міжфірмових коопераційних зв'язків з обміну інноваціями підприємствами України».** У статті розглядаються питання розвитку і запровадження інноваційних розробок українськими підприємствами. Пропонується визначення категорій «інновації» та «інноваційний процес», вказуються категоріальні особливості економічних показників. Наводиться зміст міжфірмових коопераційних зв'язків між підприємствами стосовно трансферу інноваційних продуктів. Надаються визначення найбільш вагомих та перспективних інноваційних продуктів в практичній діяльності виробничих підприємств, до яких відносять в першу чергу, об'єкти інтелектуальної власності, а саме винаходи, патенти, ноу-хау, товарні знаки та промислові зразки. Особливо розповсюдженими поряд з матеріальними продуктами стають і науково-технічні послуги. Роль останніх зростає разом із трансфером технологій, які практично прив'язані до послуг такого роду як інжиніринг, аутсорсінг, консалтинг та комплекс послуг до продажного та після продажного обслуговування інноваційних продуктів. Менеджмент міжфірмових коопераційних зв'язків включає і цілу низку таких видів інтелектуальних відносин між фахівцями та виробниками як наукові конференції, виставки, ярмарки, форуми, особисті професійні контакти з метою передачі знань, досвіду та спільних розробок в різноманітних науково-дослідних та досадно-конструкторських роботах. Така тісна співпраця науковців та практиків дозволяє виробляти високотехнологічну продукцію різного рівня складності та використовувати особливий механізм трансферу технологій яким є укладення ліцензійних угод. Ліцензії дозволяють на взаємовигідних умовах використовувати досягнення науково-технічного прогресу і залучати в між фірмові коопераційні зв'язки велику кількість зацікавлених сторін як у сфері науки, так і у сферах пов'язаних із застосуванням науково-технічних розробок у виробництві.

**Ключові слова:** міжфірмові коопераційні зв'язки, інновації, інноваційний процес, види інноваційних продуктів, наукомісткі товари, трансферт технологій, патент, ліцензія, ноу-хау, ліцензія, інжиніринг, аутсорсінг, консалтинг.

**Сергей Колодинский, Алексей Гуцалюк, Сергей Крамской. «Менеджмент межфирменных кооперационных связей по обмену инновациями предприятиями Украины».** В статье рассматриваются вопросы развития и внедрения инновационных разработок на украинских предприятиях. Предлагается определение категорий «инновации» и «инновационный процесс», указывается категориальные особенности экономических показателей. Приводится содержание межфирменных кооперационных связей между предприятиями относительно трансферта инновационных продуктов. Даются определения наиболее важных и перспективных инновационных продуктов в практической деятельности производственных предприятий, к которым относятся в первую очередь, объекты интеллектуальной собственности, а именно, открытия, патенты, ноу-хау, товарные знаки и промышленные образцы. Особенно распространенными наряду с материальными продуктами становятся и научно-технические услуги. Роль последних возрастает вместе с трансфертом технологий, которые практически привязаны к услугам такого рода как инжиниринг, аутсорсинг, консалтинг и комплекс услуг допродажного и послепродажного обслуживания инновационных продуктов. Менеджмент межфирменных кооперационных связей

включает и целую сумму таких видов интеллектуальных взаимоотношений между специалистами и производителями как научные конференции, выставки, ярмарки, форумы, личные профессиональные контакты, с целью передачи знаний, опыта и совместных разработок в разнообразных научно-исследовательских и опытно-конструкторских работах. Такая тесная работа научных исследователей и практиков позволяет изготавливать высокотехнологичную продукцию разного уровня сложности и использовать особенный механизм трансферта технологий каким является заключение лицензионных соглашений. Лицензии позволяют на взаимовыгодных условиях использовать достижения научно-технического прогресса и втягивать в межфирменные кооперационные связи большое количество заинтересованных сторон – стейкхолдеров, как в сфере науки, так и в сферах связанных с применением научно-технических разработок в производстве.

**Ключевые слова:** межфирменные кооперационные связи, инновации, инновационный процесс, виды инновационных продуктов, наукоемкие товары, трансферт технологий, патент, лицензии, инжиниринг, аутсорсинг, консалтинг

**Introduction.** Relevance of research. In the conditions of the transformation of the economy of Ukraine, innovative activity acquires an important importance. It is thanks to the introduction of new forms and methods of innovative activity that the rise and growth of industrial production becomes possible. Due to the expansion of the innovative market, enterprises increase their productivity, attract new reserves to the field of production and achieve high productivity indicators.

Innovative activity is a process that covers a wide range of activities of subjects of market relations, which include scientific and technical, production, marketing, entrepreneurial and social activities. Ultimately, they are focused on meeting specific social needs and lead to an increase in the standard of living of society.

Innovation and investment transformations have become a defining feature in the economy of Ukraine, which consists of a significant number of independent economic entities that appear as economic complexes. Manufacturing enterprises and their complexes become structural elements of the national economy and they reflect the processes of market development in the most concentrated form, taking into account the modern trends of scientific and technical progress and the further growth of the innovation process.

**Analysis of recent research and publications.** A significant contribution to economic theory on the problems of innovative development of enterprises, management of innovation processes and strategic management of innovations at the level of enterprises was made by well-known Ukrainian scientists, such as: Antonyuk L. [4], Amosha O., Bazhal Y. [6], Blank I., Beltyukov E., Burkynskyi B., Voynarenko V. [3], Galushkina T., Geets V. [11], Galchynskyi A. [10], Dubnytskyi V., Zablodska I., Zakharchenko V.I., Kovalenko M., Pashkevich M., Peresada A., Pochtovyuk A., Poruchnyk A., Rodchenko V., Savchuk V., Semenov V., Stepanov V., Shelepnytskyi P., Shcherbak V., Yakovets Yu. [8-11] and other famous scientists.

Famous foreign scientists made a significant contribution to the formation and development of theoretical and methodological provisions regarding the innovative and investment development of enterprises: Bracchi D., Weber A., Granberg A., Zhan K., Siebert H., Kristaller V., Laundhardt V., Lakhtin G., Loes A., Maiminas E., Mindeli L., Movsesyan A., Mollers F., Norton D., Ognivtsev S., Oparin V., Porter M., Predel A., Pchelintsev V., Fedosov V., Savona P., Soros D., Tunen J., Fonstein N., Hosaka N., Hoffman L. [2,5,7] and many other scientists.

**Highlighting unresolved parts of the general problem.** In the world economic literature, "innovation" is interpreted as the transformation of potential scientific and



technical progress into real, embodied in new products and technologies. The issue of innovations in our country has been developed for many years within the framework of economic studies of scientific and technological progress. The term "innovation" began to be actively used in the transitional economy of Ukraine both independently and to denote a number of related concepts: "innovative activity", "innovative process", "innovative solution", etc. However, in order to clarify the concept of "innovation", it is necessary to consider their essence and establish inter-firm cooperative relations between enterprises in the matter of delivery of innovative goods.

**Presentation of the main research material.** There are many definitions of innovation in the economic literature. For example, technical, economic, organizational, managerial, and other innovations are distinguished by content or internal structure. Such characteristics as the scale of innovations (global and local) are distinguished; parameters of the life cycle (selection and analysis of all stages and substages), as well as regularities of the implementation process.

According to the standards and recommendations of international organizations in the field of science statistics, an innovation is the final result of innovative activity, embodied in the form of a new or improved product introduced on the market, a new or improved technological process used in practical activities, or in a new approach to social services [1].

Thus, innovation is a consequence of innovative activity. The analysis of various definitions leads to the conclusion that the specific content of innovation consists of changes, and the main function of innovative activity is the function of change.

The Austrian scientist I. Schumpeter singled out five typical changes:

1. Use of new equipment, new technological processes or new market provision of production (buying - selling).

2. Introduction of products with new properties.

3. Use of new raw materials, usually of artificial origin.

4. Changes in the organization of production and its material and technical support.

5. Emergence of new sales markets.

In a number of sources, innovation is considered as a process. In this concept, it is recognized that an innovative innovation develops over time and has clearly defined stages. The main stages are the formation of the idea of a new product, the development of a prototype of a new product and its examination in the laboratory, then the experimental production of products, and after this stage the mass production of products takes place. All stages can be divided into certain separate steps or parts of each stage.

Innovations are characterized by both dynamic and static aspects. In the latter case, innovation is considered as the final result of the research and production cycle (R&C), these results have an independent range of issues. The terms "innovation" and "innovation process" are not unambiguous, although they are close. The innovation process is related to the creation, development and dissemination of innovations.

Innovation should be considered taking into account the innovation process. For innovation, three basic properties are equally important: scientific and technical novelty, production suitability, commercial feasibility. The absence of any of them negatively affects the innovation process.

The commercial aspect defines innovation as an economic necessity realized through the needs of the market. It is worth paying attention to two points: the "materialization" of innovation, inventions and developments into new technically produced types of industrial products, tools and objects of work, technologies and production organizations, and "commercialization", which turns them into a

source of profit. Therefore, scientific and technical innovations must: a) be new; b) satisfy market demand and bring profit to the producer. The spread of innovative innovations, as well as their creation, is an integral part of the innovation process [4].

There are three logical forms of the innovation process: simple intra-organizational (natural), simple inter-organizational (commodity) and extended. A simple innovation process presupposes the creation and use of an innovation within the same enterprise, the innovative innovation in this case does not directly take a commercial form. In a simple inter-organizational innovation process, the innovation acts as a subject of purchase and sale. This form of the innovation process means separating the function of the creator and producer of the innovation from the function of its consumer. Finally, the extended innovation process manifests itself in the creation of more and more innovative manufacturers, the violation of the monopoly of the pioneer manufacturer, which through mutual competition contributes to the improvement of the consumer properties of the product released to the market. That is, in the conditions of the product innovation process, there are at least two economic entities: the producer (creator) and the consumer (user) of the innovation. If the innovation is a technological process, its producer and consumer can be connected in one economic entity.

As the innovation process transforms into a commercial one, two of its organic phases are distinguished: a) creation and distribution; b) innovation diffusion. The first, mainly, includes successive stages of scientific research, research and development works, organization of experimental production and sales, organization of commercial production. In the first phase, the beneficial effect of the innovation has not yet been realized, but the

prerequisites for such implementation are being created. In the second phase, the socially useful effect is redistributed between producers of the innovation, as well as between producers and consumers.

As a result of diffusion, the number and quality characteristics of both producers and consumers are changing. Continuity of innovative processes has a decisive influence on the speed and breadth of diffusion of innovative innovations in the market economy [6]. On the diffusion of innovations, interfirm cooperation ties are formed for the exchange of innovations between Ukrainian enterprises, which is shown in Figure 1.

Diffusion of innovations is a process by which an innovation is transmitted through inter-firm communication channels between members of the socio-economic system over time. Innovative innovations can be ideas, objects, technologies, processes that are new for the relevant business entity. In other words, diffusion is the spread of an already mastered, tested and previously used innovation in new conditions or places of application, for example, by other business entities.

The spread of innovation is an information process, the form and speed of which depends on the power of communication channels, the peculiarities of the perception of information by business entities, their ability to make practical use of this information, etc. This is due to the fact that business entities operating in the real economic environment have different attitudes towards the search for innovations and different capacities for their assimilation [6].

One of the important factors in the spread of any innovation is its interaction with the corresponding socio-economic environment, an essential element of which is competing technologies.

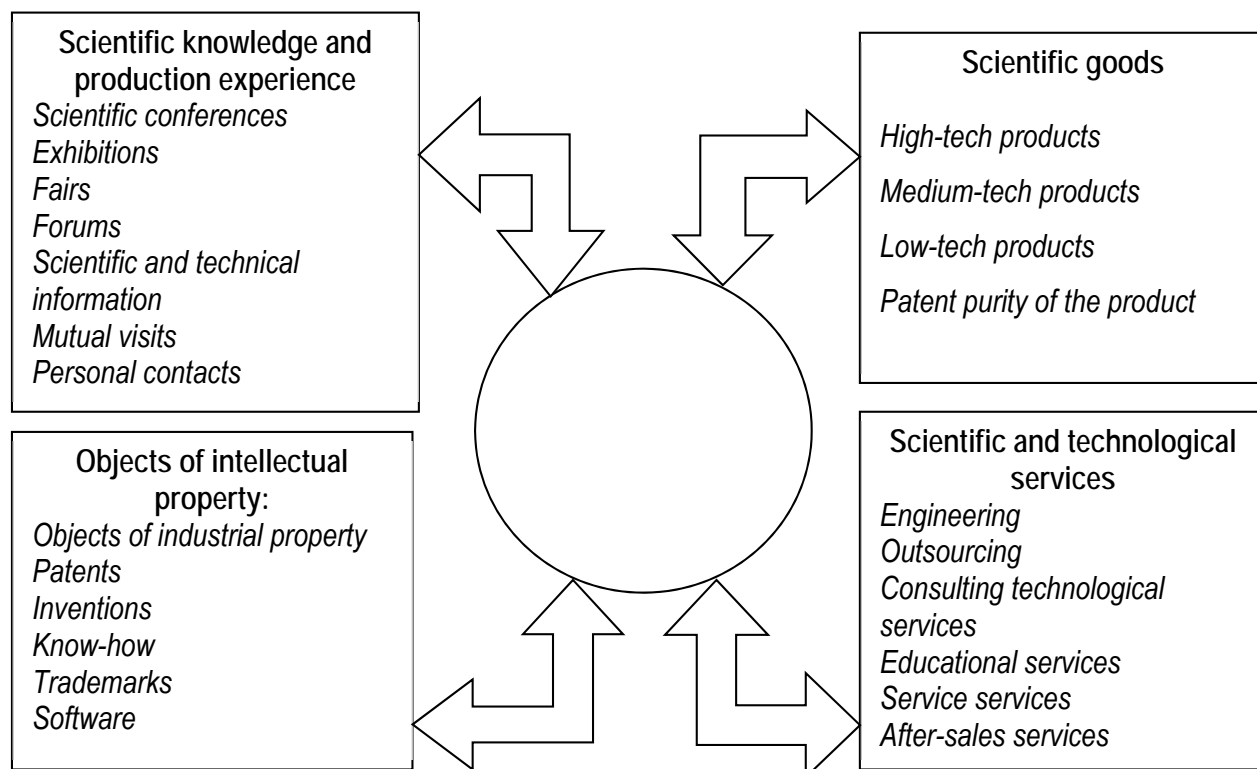


Figure 1 – The structure of inter-firm cooperative relations for the exchange of innovations by Ukrainian enterprises

Source: Constructed and developed authors.

According to the theory of long waves of economic development, which is caused by innovative innovations, of the Austrian scientist Schumpeter J., the diffusion of inter-firm cooperative relations is a process of

cumulative increase in the number of imitators who introduce innovations following the innovator in anticipation of higher profits [1].

Table 1 – Number of industrial enterprises that introduced innovation (innovation and/or technological processes)

Indicators of innovative activity	2019		2020	
	billion hryvnias	as a % of the total number of enterprises	billion hryvnias	as a % of the total number of enterprises
That's all	739	15,6	687	13,8
Including New ones were introduced technological processes	461	9,5	478	9,6
Of them new or significantly improved low- waste and resource-saving ones	224	4,7	174	3,5
Introduced types of innovative products (goods, services)	637	13,5	336	6,8
Of them New machines, equipment, devices, devices	171	3,6	137	6,8

Source: Developed on the basis of the statistical yearbook of Ukraine for 2020. State Statistics Service of Ukraine [12].

The introduction of the latest technological processes has recently decreased from UAH 739 billion. to 687 billion hryvnias, although such a decrease is not significant, but such a trend is unacceptable. The indicators of growth in the purchase of new machines, equipment, devices and devices are more positive, and such growth almost doubled indicates that Ukrainian enterprises prefer the purchase of new equipment. This trend characterizes the greater material component of the innovation process for Ukrainian enterprises.

Analyzing the sectoral structure of interfirm cooperative agreements and joint ventures, Ukrainian researchers note its difference from that in the first post-war decades, when joint agreements were mainly in extractive industries and the raw material processing industry. Now the main areas of interfirm cooperative cooperation are R&D, as well as those industries where foreign direct investment has become predominant in expanding ties with foreign companies, for

example, commercial aircraft construction, metallurgy, automobile and such "young" industries as chemical industry, biotechnology, technologies aimed at environmental protection. Interfirm cooperative cooperation involving foreign capital is now usually accompanied by the transfer of innovative technologies; in a large number of cases, this is the export of technology from the USA, North Korea, and China, but in the metallurgy, chemical, and automotive industries, joint production implies a significant American and European import of technologies [8].

The structure of total innovation costs of enterprises by main types of economic activity is presented in Figure 2. In 2020, the costs of innovation in Ukraine by industrial enterprises reached UAH 14,220.9 million, the number of industrial enterprises implementing innovations in the production process was 782 enterprises.

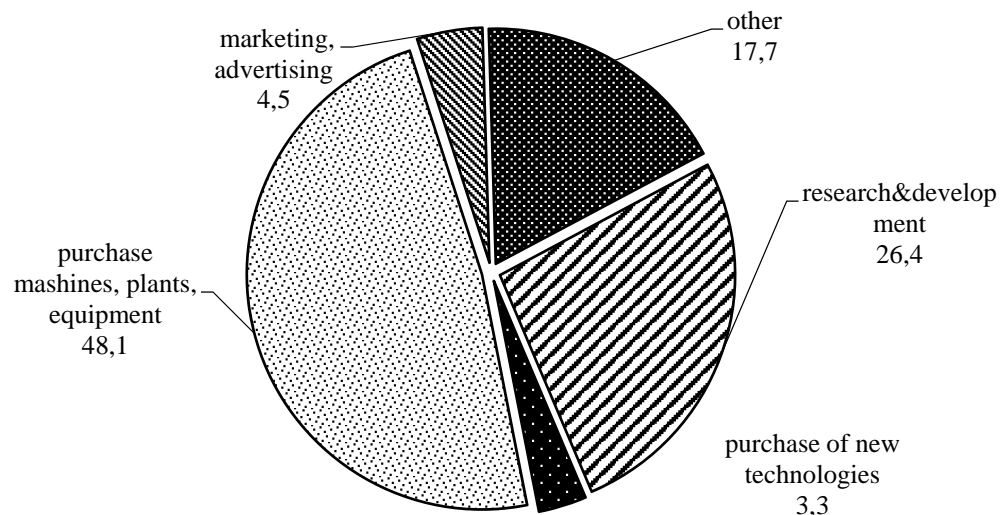


Figure 2 –The structure of innovation costs in industry in 2020 (to the total volume, as a percentage)

Source: Developed on the basis of the statistical yearbook of Ukraine for 2020. State Statistics Service of Ukraine [12].

A significant number of industrial enterprises are not engaged in the implementation of innovations at all, and

such an internal reserve is not yet realized and indicates significant prospects for improving the innovation process.

American economists note that 87% of all interfirm cooperation agreements on the exchange of innovations account for five large industrial sectors (automotive, aerospace, telecommunications, electrical engineering, computer manufacturing) and this concentration is not accidental. These industries are characterized by high barriers to market access, globalization of production, significant economies of scale, rapidly changing technology, and high operating costs, i.e., features that are most easily overcome through cooperative agreements. Examples of expensive and risky projects, in particular, due to technological obsolescence soon after the end of their development, are such as the development of a "new world car", a transcontinental airliner or a complex telecommunications system [9].

As for the specific goals of cooperation, the largest number of interfirm innovation agreements are aimed at joint R&D (38%) and production of a new product (23.3%), that is, they are at the early, competitive stages of the production process. The purpose of cooperation also varies by region of Ukraine. The main and predominant purpose of interfirm cooperative agreements of the EEC and the USA is product development, while Japanese firms are most active in concluding agreements in the field of production.

The modern international exchange of innovative technologies is characterized by the following new trends:

1. The exchange of technologies is increasingly considered as an equal part of the business strategy of enterprises, coordinated with other key areas of business activity (export, joint ventures, cooperation, etc.). So, for example, the sale of licenses promotes trade in goods due to the supply of components and raw materials. It is often practically the only means of entering the market of a number of countries.

2. Corporations increasingly strive to limit the access of "foreign" firms to their innovative technologies and increase the volume of their sales to subsidiaries. Therefore, the share of technology sales to its

branches in countries such as the USA is 75-80%. For example, the American company IVM sells licenses to independent firms only for individual computer nodes, and mostly those whose production has been discontinued by the company itself, and sells licenses for the manufacture of computers only to its subsidiaries.

3. Most often, agreements on the transfer of technologies include complex provision of services, including the performance of works such as engineering, the transfer of patent rights, know-how, design and technological documentation, the supply of special equipment that completes products and materials, the provision of technical assistance in installation, commissioning and adjustment of equipment, training of specialists, etc.

4. The growth rate of trade in innovative technologies is ahead of the growth rate of trade in other goods. Currently, the total volume of trade in innovative technologies in the world is estimated at more than 500 billion US dollars. The reason for such rapid development of the market of innovative goods and technologies lies in the exceptionally high profitability of trading in innovative goods.

5. Most often, on the basis of license agreements, cooperative relations between enterprises that are part of joint financial and industrial groups or joint-stock companies with a wide range of goods are created and developed.

6. The growth of competition in the market of innovative technologies leads to the improvement of marketing activities of firms operating in this market. At the same time, special attention is paid to such indicators as the assessment of the license "portfolio" of enterprises, the preparation of the licensed object for sale, or the patenting and strengthening of patent protection of the licensed objects, as well as the negotiations and drawing up of license agreements and the speed of execution of license agreements.

7. In recent years, the practice of economic cooperation is increasingly carried

out according to the formulas: "technology – services – equipment", while earlier Ukrainian enterprises carried out mutual exchange as follows: "equipment - services - technology". Thus, equipment and materials become goods that accompany the supply of knowledge and services that are of primary and most important importance for manufacturing enterprises.

8. Orientation of the scientific and technical policy of enterprises not only on the development of new technologies, but also on their quick and timely application, which makes the purchase of innovative technologies a more profitable operation than their own development and long-term scientific research.

Indeed, with all the benefits of technology trade for the licensor, usually a large part of the profit (up to 3/4) remains with the licensee, and the licensor gets a smaller (about 1/4) part. Usually (in 80-90% of cases) the licensee pays for the license after producing and selling the products. Therefore, the licensee does not need significant funds to purchase licenses [12]. The advantages of a strategy focused on the purchase of licenses include:

- shortening the terms of mastering the latest technology and obtaining a significant economic effect due to the earlier introduction of new equipment into industrial operation;
- the ability to meet the need for new equipment and technology in a short period of time;
- the emergence of the ability to actively oppose competitors, ensuring a high level

and quality of development and production products;

- saving funds and time for conducting own research and development (R&D) work;
- the possibility of reducing production costs by organizing technological cooperation with licensors and other firms that are leaders in the production of science-intensive goods;
- the possibility of reducing currency costs due to the production of licensed products instead of their import and gaining experience in conducting research and development works.

**Conclusions.** Thus, the wide and comprehensive exchange of innovative technologies based on the establishment of inter-company cooperative agreements leads to significant economic growth, which can be estimated not only by the amount of profit received, but it also has large social and economic consequences that lead to the spread of the product sales market.

The current period of development of the Ukrainian economy is characterized by an active search for measures to increase and restore the industrial potential of enterprises. However, the lack of comprehensiveness in the implementation of economic policy does not allow to ensure the accelerated growth of domestic enterprises and increase the efficiency of their activities. Restructuring of enterprises with effective formation and use of innovative production renewal mechanisms should contribute to increasing the competitiveness of domestic production and carrying out structural transformations in Ukrainian industry at a new level.

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## **ASSESSMENT OF FACTORS FOR FORMING THE FINANCIAL POTENTIAL OF AGRICULTURAL PRODUCTION OF THE NATIONAL ECONOMY**

**Banar Oksana, Starynets Oleksandr, Kozlovtseva Valentyna, Bondar Iuliia.** *“Assessment of factors for forming the financial potential of agricultural production of the national economy”.* The article deals with the evaluation of agricultural production and the national economy's financial facilities development, with emphasis on its financial assurance key figures. The peculiarities of agricultural production financial facility development and the improvement of regional agricultural enterprises' financial assurance have been defined. The peculiarities of financial resource use in modern conditions have been analyzed. The control of the financial resources helped determine the forecast value of agricultural production financial facilities. The aim of the article is to define the factors of agricultural production financial facilities, which are taken as the basis of macroeconomic analysis, and explain the characteristics of the region's agricultural enterprise development in Ukraine's agroclimatic zones.



*Agricultural production may have an efficient development due to the commensurability and equation of the real and potential volume of financial resources, which assure financial facilities and play an important role in the stability of agricultural activity. At the same time, the dynamism of the market environment almost always causes a change in agricultural production conditions. Distribution and redistribution of income and financial resources between agricultural market entities influences the volume of agricultural enterprises' financial resources and determines the conditions of their access to cheap financial loans. On the one hand, the vectorial retargeting of the financial system towards a favorable financial environment assurance contributes to the reasonableness of problem solving of agricultural production financial facilities in this manner. On the other hand, it is caused by the improvement of agricultural enterprises' business functions and financial components, which are adjusted to external environmental realities. Discharged funds from the state budget financial flow and the banking sector will allow for the formation of financial facilities and potential sources for the development of agricultural enterprises, subject to the improvement of the legal framework in the following direction and the state control scheme of agricultural production finance and credit assurance.*

*The complexity of the category "financial facilities" shows that it should be reviewed as the ability to transform financial resources into the real factor of agricultural production development. Financial facilities can be used to estimate the rate of profitability in the critical range, save money, and possibly establish a degree of separation between the activity spheres of agricultural enterprises.*

*Considering the importance of bank crediting and state financial support as factors in the development of regional financial facilities, it is reasonable to consider their overall influence on earning capacity, which corresponds to the critical level of agricultural production financial facilities. Commensurability: The establishment of all elements and components of financial facilities and the use of their possibilities will assure the equating of nationwide, sectoral, and private interests for economic development and the activation of long-term investment activity.*

**Keywords:** financial resources, financial facilities, agricultural production, the evaluation of factors, national economy.

**Банар Оксана, Старинець Олександр, Козловцева Валентина, Бондар Юлія. «Оцінка факторів формування фінансового потенціалу аграрного виробництва національної економіки».** В статті розглянуто оцінку формування фінансового потенціалу аграрного виробництва національної економіки з окресленням показників його фінансового забезпечення. Визначено особливості формування фінансового потенціалу аграрного виробництва і удосконалення фінансового забезпечення аграрних підприємств регіону, що дає змогу проаналізувати можливості використання фінансових ресурсів в сучасних умовах. Моніторинг фінансових ресурсів допоміг визначити прогнозну величину фінансового потенціалу аграрного виробництва.

*Аграрне виробництво може мати ефективний розвиток завдяки співмірності та рівності реальних і потенційних обсягів фінансових ресурсів, які забезпечують фінансову спроможність і відіграють важливу роль у стабільній діяльності аграрної сфери. Водночас динамізм ринкового середовища майже в кожному випадку викликає зміну умов сільськогосподарського виробництва. Розподіл і перерозподіл доходів і фінансових ресурсів між суб'єктами аграрного ринку впливає на обсяг фінансових ресурсів сільськогосподарських підприємств, визначає умови їх доступу до дешевих фінансових кредитів. Доцільність вирішення проблем фінансування сільськогосподарського виробництва саме таким шляхом зумовлена, з одного боку, векторною переорієнтацією фінансової системи на забезпечення сприятливого фінансового середовища. З іншого боку, це зумовлено вдосконаленням фінансової складової діяльності аграрної сфери, яка адаптована до реальності зовнішнього середовища.*

Складність категорії «фінансові засоби» свідчить про те, що її слід розглядати як здатність трансформувати фінансові ресурси в реальний фактор розвитку сільськогосподарського виробництва. Фінансові засоби можуть бути використані як оцінка показника критичного діапазону прибутковості, економії витрат, встановлення можливого ступеня розподілу фінансових ресурсів між сферами діяльності аграрної сфери національної економіки.

Враховуючи важливість банківського кредитування та державної фінансової підтримки як чинників розвитку фінансової бази регіону, доцільно розглядати їх загальний вплив на прибутковість, що відповідає критичному рівню фінансової бази аграрного виробництва. Встановлення співмірності всіх елементів і складових фінансових об'єктів, використання їх можливостей забезпечить збалансованість загальнодержавних, галузевих і приватних інтересів економічного розвитку та активізацію довгострокової інвестиційної діяльності.

**Ключові слова:** фінансові ресурси, фінансовий потенціал, аграрне виробництво, оцінка чинників, національна економіка..

**Банар Оксана, Старинец Александр, Козловцева Валентина, Бондарь Юлия. «Оценка факторов, формирующих финансовый потенциал аграрного производства народного хозяйства».** В статье рассмотрена оценка формирования финансового потенциала аграрного производства национальной экономики с определением показателей его финансового обеспечения. Определены особенности формирования финансового потенциала аграрного производства и усовершенствования финансового обеспечения аграрных предприятий региона, что позволяет проанализировать возможности использования финансовых ресурсов в современных условиях. Мониторинг финансовых ресурсов помог определить прогнозную величину финансового потенциала аграрного производства.

Аграрное производство может иметь эффективное развитие благодаря соразмерности и равенству реальных и потенциальных объемов финансовых ресурсов, обеспечивающих финансовую состоятельность и играющих важную роль в стабильной деятельности аграрной сферы. В то же время, динамизм рыночной среды почти в каждом случае вызывает изменение условий сельскохозяйственного производства. Распределение и перераспределение доходов и финансовых ресурсов между субъектами аграрного рынка влияет на объем финансовых ресурсов сельскохозяйственных предприятий, определяет условия их доступа к дешевым финансовым кредитам. Целесообразность решения проблем финансирования сельскохозяйственного производства именно таким путем обусловлена, с одной стороны, векторной переориентацией финансовой системы в обеспечение благоприятной финансовой среды. Кроме того, это обусловлено усовершенствованием финансовой деятельности аграрной сферы, адаптированной к реальности внешней среды.

Сложность категории "финансовые средства" свидетельствует о том, что ее следует рассматривать как способность трансформировать финансовые ресурсы в реальный фактор развития сельскохозяйственного производства. Финансовые средства могут быть использованы в качестве оценки показателя критического диапазона доходности, экономии затрат, установления возможной степени распределения финансовых ресурсов между сферами деятельности аграрной сферы национальной экономики.

Учитывая важность банковского кредитования и государственной финансовой поддержки как факторов развития финансовой базы региона, целесообразно рассматривать их общее влияние на прибыльность, что соответствует критичному уровню финансовой базы аграрного производства. Установление соразмерности всех элементов и составляющих финансовых объектов, использование их возможностей обеспечит сбалансированность общегосударственных,

*отраслевых и частных интересов экономического развития и активизацию долгосрочной инвестиционной деятельности.*

**Ключевые слова:** финансовые ресурсы, финансовый потенциал, аграрное производство, оценка факторов, национальная экономика

**Introduction.** Agricultural production may have an efficient development due to the commensurability and equation of real and potential volume of financial resources, which assure financial facilities and play the important role in stable activity of agricultural sphere. At the same time, the dynamism of market environment almost in every case causes the change of agricultural production conditions. Distribution and redistribution of income and financial resources between agricultural market entities influences the volume of agricultural enterprises financial resources, determines the conditions of their access to cheap financial loans.

Reasonability of problems solving of agricultural production financial facilities in this particular way is caused, on the one hand, by vectorial retargeting of financial system towards favourable financial environment assurance. On the other hand, it is caused by the improvement of agricultural enterprises business function financial component, which is adjusted to external environment reality.

**Recent research and publications analysis.** The problem of financial facilities development hasn't been paid enough attention for a long period of time by the national researchers. Nowadays different aspects of this problem are a major focus of interest of the famous agrarian researchers, including A.A. Ajupov, A.A. Kurilova, Y. A. Anisimova [1], V.G. Boronos [2], O.Y. Hudz et al. [3], M.Y. Demianenko [4], I.V. Karpochuk [5], I.I. Chunyańska [6], Y. Anisimova [7], Yu. Bondar et al. [8], O. Hutsaliuk et al. [9-11], O. Prokopyshyn et al. [12], I. Koshkalda et al. [13] etc. The main attention in their investigations is paid to the problems of development, distribution and use of financial resources at the level of the state, agricultural production sphere and agricultural enterprises. At the same time there are a lot of problems, which have been investigated very slightly or still

have polemical character. There is no one and only point of view according to methodical principles of the specification of time and resource measures of agricultural production financial assurance with the emphasis on the sphere particular characteristics.

**The aim of the article** is to define the factors of agricultural production financial facilities, which are taken as a basis of macroeconomic analysis and the explanation of forecasting characteristics of the region agricultural enterprises development in Ukraine's agroclimatic zones.

**Key research findings.** Financial resources, which are the complex of the cash resources funds, are in the possession of different economic entities (the state, sphere, enterprise) and specify only one of the components of financial facilities – their really consumed part. Therefore financial resources can't generally register a variety of financial facilities peculiarities, such as the possibility to realize secret reserves, the ability to increase the volume of financial resources, the probability of the additional investment resources derivation etc.

In particular the inability of the concept "financial resources" to describe all the economics possibilities according to the production of different financial flows caused the appearance of the concept "financial facilities". The most meaningful and at the same time laconic definition of financial facilities was given by I.I. Chunyańska as "the state's ability to raise funds and use them efficiently with the aim to provide economic development" [6]. While investigating the concept "financial facilities" at the state level V.G. Boronos defines it as the complex of specifications, "which are able to provide integral assessment on the first place - of the financial condition at the macrolevel and microlevel; factors of financial condition change on the second place; and finally the

challenges of the stable economic growth or financial economic activity success at the microlevel" [2]. We share the scientist's opinion according to the fact that state financial facilities are the process of financial resources efficient use providing "the removal of the possibility of financial means abuse and financial flows redirection to the use spheres which are not supported by the law" [7]. We agree that financial facilities are also the complex of diagnostic, support and check-out measures, which have financial character, provide the efficiency of financial activity of economic entities and minimize the exposure of internal and external environment to financial resources [1]. However, in our opinion, state financial facilities are the complex of real and suspected financial resources and income, which may be used for any measures solution, that also includes measures, received by means of the redistribution from one use sphere to another. It may happen without the transition of critical limits, that is without the threat to destroy spheres, from which financial resources have been withdrawn.

It has a clear explanation, as financial resources stock out causes the underfunding of the needs in material production sphere; the use of funds inappropriately; great amount of debts and problems with their operation; low level of bank system plough-back; the raise of percentage rates for short credit use; the decrease of the volume of long-term bank crediting; the increase of the inflation and the currency zig; withdrawal of financial assets abroad; the deformations in accounting and possible financing fraud.

With the aim to unite key characteristics of this complicated economic category and solve the problems of this investigation, we offer to determine financial facilities of agricultural production as general function and estimated factor of industrial sphere according to the development, distribution and use of financial resources for region agricultural enterprises efficient functioning and development.

The complex of financial facilities components of agricultural production sphere should be reflected in the system of financial analysis rates, which are worth reviewing in terms of direct and relative. However, for agricultural enterprises financial activity not the rates, but their threshold amounts – boundary values (or indicators) really matter. Their nonobservance leads to financial flexibility breakdown, prevents normal development of different reproduction elements, causes and develops negative, destructive tendencies in agricultural production.

The definition of financial facilities with the use of relative efficiency rates (rates of business activity) are based on the integrated index of agricultural production financial facilities, which is calculated as geometric average of efficiency rates – the factors of financial facilities sphere development. In such a case, taking into account the significance of financial resources and their sources as factors of financial facilities development, we suppose it rational to review not financial resources and their sources business activity rate use, but to consider complex influence of the component rates: the circulation of manufactured goods, debit debts, cash resources, their equivalents and following financial investments, long-term and short term bank loans, state financial support [3].

Direct rates of agricultural production financial facilities determination are the indicators of earning capacity market based valuation due to the existing region agricultural enterprises budgeting and market variables (such as prices, demand and supply, competitiveness etc.), which may be potentially and practically obtained on the base of conditions, determined by financial resources market.

Every region, which takes part on equal basis in the process of agricultural production earning capacity creation has benefits for the appropriate primary income (it is primary in the sense, in which it is formed by the market). Actually, the region gets such earning

capacity in the process of primary distribution of created and realized gross domestic (or regional) product. General income of agricultural production (income or gross value added, that is income without financial loss) is formed and distributed among regions not only in practice, but also implicitly, on the basis of rated limiting conditions of financial facilities (financial resources and the price for funding sources).

Total income, which falls within every region, implicitly corresponds to the limiting level of agricultural production financial facilities. In a wide sense, the complex of agricultural production primary income is a general agricultural production potential income, apart from income, which legally belongs to the state in the form of direct or indirect taxes.

In such a way, agricultural production complex earning capacity consists of the gross value added (including depreciation), because the latter acquires the form of operating earnings in the short-term period. Agriculture production and region agricultural enterprises financial facilities may develop in manner of accuracy degree growth according to:

- gross produce (private financial resources);
- gross value added (gross produce);
- added value (pure income, without depreciation);
- total profit;
- income, which remains at the person's disposal after tax payment and other obligatory budgetary payments.

In any case financial facilities are based in the conceptual sense on the theory of financial resources management and financial flows development. The change of their characteristics influences financial results of activity and paying capacity of region enterprises and agricultural production altogether.

Macroeconomical analysis of agricultural production should serve as economic justification of financial facilities characteristics, taking into account the

acceptance of region agricultural enterprises efficient functioning criteria due to assurance of equal and sustainable movement of financial flows. Pure income, as the factor of financial facilities development, is a direct rate of region agricultural enterprises financial obligations absorbing.

During 2015-2021 pure income of agricultural enterprises of the Forest-steppe zone increased in 4.4 times. In the structure of financial assurance the amount of private financial resources overbalances the amount of borrowed assets more than in 2.0 times. In the structure of borrowed financial assets relative share of short-term loans increased in 2.6 times. What concerns long-term loans, relative share increased more than in 2 times [14]. The dimension of state financial support comprises in average 7.4 %, among them at the expense of household allowance 49.2 % (for plant production - 0.6 %, for animal production - 48.6 %); at the expense of the special taxation scheme - 50.8 % (in plant production field - 3.5 %, in animal production field - 47.3 %) [15].

In the Polissya zone and the Western region the portion of short-term loans in the structure of borrowed assets financing distribution comprises 8.7 %, the portion of long-term loans comprises 50.3 % (Register of the licensed participants of fund market, 2015-2021). The dimension of region agricultural production state financial support comprises only 3.3 %. In its structure the household allowance for plant production is formed only within 0.2 %, for animal production - 5.6 %; financing of the sphere at the expense of tax allowance in plant production comprises 71.9 %, in animal production it comprises 22.3% [16].

During the period of investigation the Polissya and the Western regions increased the volume of private financial resources in 2.8 times, the volume of pure income - in 4.4 times. In such a case the amount of long-term loans for sphere development increased in 1.9 times, the amount of short-term loans increased in 3.0 times [14].

Agricultural production of the Steppe zone is provided with its own financial resources in 61.4 %, pure income makes 42.5 %. The sphere's region financing at the expense of borrowed assets fundraising with a short-term period of validity is formed within 12.4 %, with a long-term period – 80.4 % [14]. The distribution of state government allowance according to the field direction is formed percentagewise to the volume of plant and animal production as 70:30. At the expense of assets accumulation of value-added percentage the support of agricultural producers increased within the special taxation scheme to 1950.7 million hryvnias, that is in 3.8 times, during 2015-2021 [15].

With the help of the special Programme «MatCad» we have conducted the calculation

of the influence of financial sources activity on agricultural production pure income with its further distribution among Ukraine's agroclimatic zones, especially the Steppe zone (with and without account of the Autonomous Republic of Crimea). It was done taking into account the fact that the bank crediting and state financial support, the amount of which is several times bigger than the direct levels of other rates, used in financial facilities parameters development.

Variable-based scheme of agricultural production pure income forecasting according to Ukraine's agroclimatic zones on the basis of curvilinear relation is shown in the chart 1, forecasting characteristics of the financial facilities for 2021 are given in Table 1..

Table 1 – Forecasting of agricultural production pure income according to Ukraine's agroclimatic zones

Agroclimatic zone	Polynomial of pure income forecasting	Determination coefficient (R <sup>2</sup> )
The Forest steppe	$Y = -2 \cdot 10^{-17}x^5 - 3 \cdot 10^{-12}x^4 + 2 \cdot 10^{-7}x^3 + 0,0053x^2 - 72,76x + 391390$ $Y = 0,00002x^2 - 0,5438x + 58689,24$	0.9921 0.4256
The Polissya and the Western region	$Y = 1 \cdot 10^{-11}x^4 - 4 \cdot 10^{-7}x^3 + 0,0046x^2 - 19,01x + 36481$ $Y = 0,00008x^2 - 0,8278x + 16798,43$	0.8766 0.4537
The Steppe with account of the Autonomous Republic of Crimea	$Y = 6 \cdot 10^{-13}x^4 - 6 \cdot 10^{-8}x^3 + 0,0022x^2 - 30,85x + 184232$ $Y = 1,523x + 30812,49$ $Y = 0,00005x^2 - 0,7436x + 51164,98$	0,9763 0.7960 0.8668
The Steppe (without the Autonomous Republic of Crimea)	$Y = 4 \cdot 10^{-13}x^4 - 5 \cdot 10^{-8}x^3 + 0,0018x^2 - 27,17x + 176533$ $Y = 1,506x + 35677,82$ $Y = 0,00005x^2 - 0,7186x + 56484,88$	0.9798 0.7870 0.8612

*The source: author's calculations.*

It has been determined that there is a close connection between the level of financial assurance and pure income according to all agroclimatic zones. In such a way, for the regions of the Forest steppe zone the polynomial of the second order is acceptable ( $R^2 = 0.4256$ ). In this context

forecasting characteristics of pure income for one region will range from 3104.4 million hryvnias, which is 11 % of the compound rate of this zone – 27940 million hryvnias.

The tightness of the rates parametric interrelation in the Polissya zone and the Western region ( $R^2 = 0.4537$ ) defines the

polynomial of pure income forecasting per one region 1601,4 million hryvnias on the average or 14,3 % from its general amount (11210 million hryvnias). In the Steppe zone the polynomial of the rate forecasting shows significant density ( $R^2 = 0.8612$ ). It means that agricultural enterprises activity profitableness of 9 regions directly depends on bank crediting and state financing.

Upon condition of all the Steppe zone regions integration to the forecasting of pure income volume, its level will correspond to 54.5 % of Ukraine's agricultural production compound income. In this context one region will receive on the average 5220 million hryvnias of pure income. At the same time, within the absence of the Autonomous Republic of Crimea, agricultural production will receive less private financial resources in the amount of 205 million hryvnias. The level of one region profitableness will correspond

to 12 % of its overall dimension according to the agroclimatic zone agricultural production (40120 million hryvnias).

It has been defined, that taking into account financial facilities of the Autonomous Republic of Crimea, overall rate of the Steppe zone agricultural production must correspond to 13970.6 million hryvnias on the average, the amount of bank crediting will comprise not less than 72146.37 million hryvnias (including short-term loans – 9379 million hryvnias and long-term loans – 52770.37 million hryvnias), state financial support will comprise 4643.53 million hryvnias (especially to support the sphere of plant production at the expense of government allowances within 46.44 million hryvnias, to support the sphere of animal production – 116.08 million hryvnias). Boundary parameters of financial facilities per one region will correspond to 9612.87 million hryvnias on the average (Figure 1).

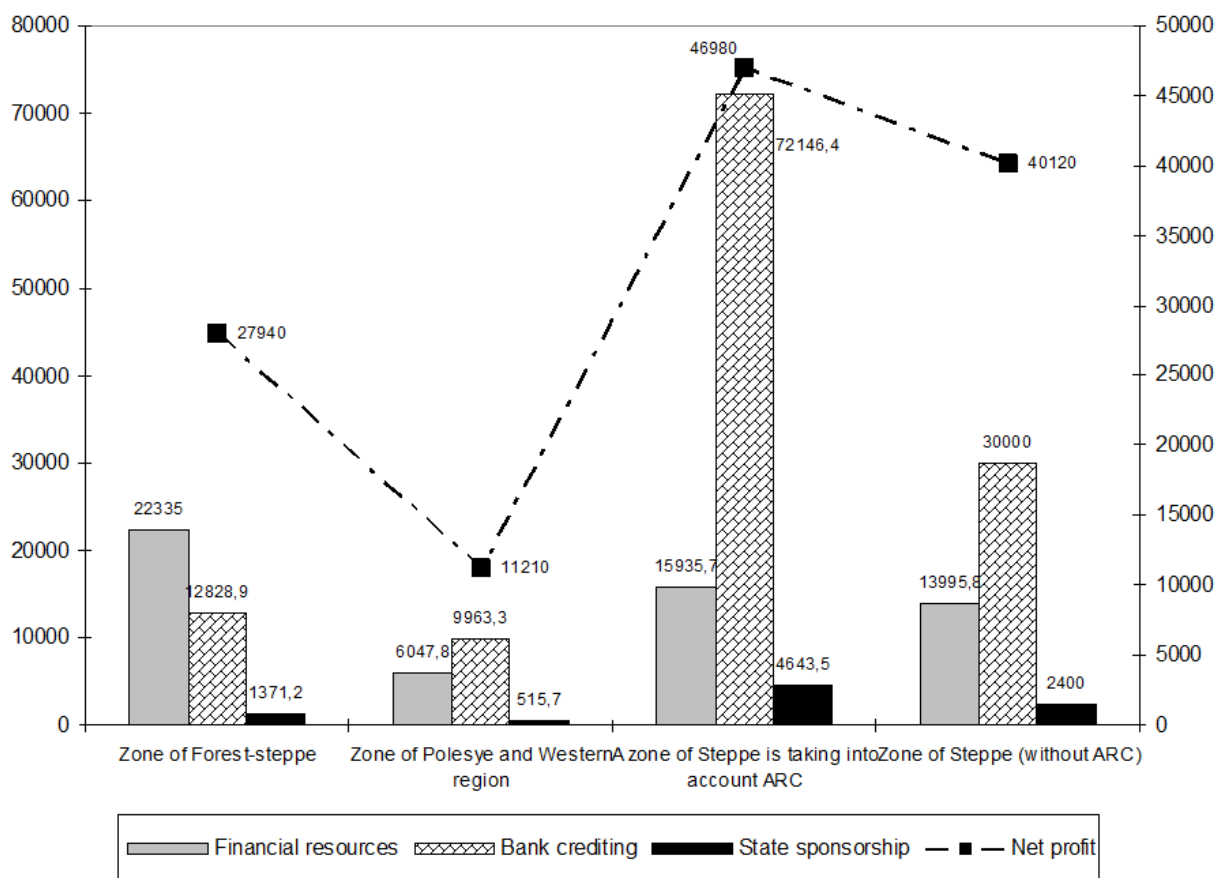


Figure 1 – Prognosis parameters of financial potential of agro-climatic zones of agrarian production of Ukraine in 2021, million UAH.

The source: author's calculations.

Agricultural production financial capacity, under condition of the Autonomous Republic of Crimea expulsion from the Steppe zone, will decrease to 38 % and will comprise 86515.8 million hryvnias. Undersupply of overall dimension of private financial resources will comprise 8800 million hryvnias. Besides, the volume of state financial support will decrease to 48.3 %, especially the amount of funds according to the special taxation scheme of the plant and animal production sphere will comprise 13 % from the level of 2020.

Discharged funds from the state budget financial flow and banking sector will make it possible to form financial facilities potential sources for agricultural enterprises development under condition of improvement of legal framework in the following direction and state control scheme of agricultural production finance and credit assurance.

**Conclusions.** Complexity of the category "financial facilities" shows that it should be

reviewed as the ability to transform financial resources into the real factor of agricultural production development. Financial facilities may be used as estimating rate of profitableness critical range, cost saving, financial resources distribution possible degree establishment between agricultural enterprises activity spheres.

Taking into account the importance of bank crediting and state financial support as the factors of region financial facilities development, it is reasonable to consider their overall influence on earning capacity, which corresponds to agricultural production financial facilities critical level.

Commensurability establishment of all elements and components of financial facilities, the use of their possibilities will assure the equation of nationwide, sectorial and private interests for economic development and the activation of long-term investment activity.

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