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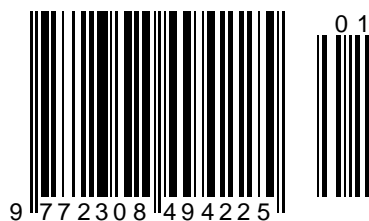
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THE RELATIONSHIP BETWEEN ENSURING A STABLE FINANCIAL POSITION OF AN ENTERPRISE WITH THE FORMATION OF CONSUMER PREFERENCES FOR THESE PRODUCTS IN THE REGIONS OF THE SOUTHERN FEDERAL DISTRICT AND THE NORTH CAUCASUS FEDERAL DISTRICT

Abstract: in the article the authors considering the dynamics of market development in the last decades of the last century and at the beginning of the third millennium are confirmed by the growing interest of consumer demand in the quality of domestic goods. For all the economic, social and political costs, humanity is getting richer, but wealth is unevenly distributed. Finance, as before, is concentrated in certain regions, however, in the same way as the premieres of modern production. Analysts predict the course towards the quality of goods confidently and everywhere. The consumer realized the need to pay for the advantage of quality services and products. It is the turn of the manufacturer, who must close "greed" and "deadly sin" in his mind in order to burn out greed. Prominent economists unequivocally declare that an increase in the quality of goods is not causally related to an increase in prices. Positive changes in the quality of goods imply qualitative changes in technology, technology, organization and production management. Manufacturing needs to improve, which does not mean becoming more costly, in order to guarantee sustainable demand.

Key words: quality, import substitution, demand, competitiveness, market, profit, demand, buyer, manufacturer, financial stability, sustainable TPP, attractiveness, assortment, assortment policy, demand, sales, paradigm, economic policy, economic analysis, team, success.

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Introduction

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In the era of globalization, sustainable competitive advantages are often purely local and local in nature. Standard factors of production, information and technology are readily available. However, the competitive advantages of a higher

order are still geographically limited, since the regions have their own, affecting the level of their economic growth, features that lie outside the area of endowment with factors of production. Attributes of this kind are interrelated and complementary. That is why competitive success is the result of combining the unique socio-economic environment in the region with the competitive advantage of industries.

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Regional differences are very important and often essential to competitive advantage.

This predetermines the need to solve the problem of sustainable regional development from the standpoint of the cluster approach with its inherent conceptual apparatus, tools and logic, which together make it possible to link the competitive potential of the region with the formation of a strategy for its sustainable development in modern conditions. The intensification of structural transformations at the present time is accompanied by an increasingly pronounced territorial concentration of economic activity. Currently, this is manifested in the formation of new forms of entrepreneurial structures focused on the development of regions.

Of great importance in the management of product output is the assessment of the actual output and sale within the production capacity, i.e. within the limits of the minimum - the maximum volume of production. Comparison with the minimum, break-even volume allows you to determine the degree, or zone, of the organization's safety and, with a negative value of safety, remove certain types of products from production, change the production conditions and thereby reduce costs or stop production of products.

Comparison of the achieved volume of output with the maximum volume, determined by the production potential of the organization, allows you to assess the possibilities of profit growth with an increase in production volumes, if the demand or the market share of the organization increases.

For a footwear company seeking a strong position in the market, price setting is key to the success of the chosen strategy. Price is a tool to stimulate demand and at the same time is a major factor in long-term profitability.

Getting the maximum profit is possible with the optimal combination of sales volumes and prices for manufactured products. However, it is not possible to sell an unlimited number of shoes for the same price. An increase in sales leads to market saturation and a drop in effective demand for products. At some point in time, in order to sell a large number of shoes, you will need to lower the price. The financial well-being and stability of an enterprise largely depends on the flow of funds to cover its obligations. Lack of the minimum required supply of funds may indicate financial difficulties. In turn, an excess of cash may be a sign that the company is suffering losses. The reason for these losses can be associated with both inflation and depreciation of money, and with the missed opportunity of their profitable placement and obtaining additional income. In any case, it is the analysis of cash flows that will make it possible to establish the real financial condition of the enterprise.

Cash flow is the difference between the amounts of receipts and payments of funds to an enterprise for a certain period of time. It characterizes the degree of

self-financing of an enterprise, its financial strength, financial potential, profitability.

Cash flow is characterized by:

- an inflow equal to the amount of cash receipts (or results in value terms) at this step;
- an outflow equal to the payments at this step;
- balance equal to the difference between inflow and outflow.

Cash flow usually consists of partial flows from individual activities:

- cash flow from the investment activities of the enterprise;
- cash flow from operating activities;
- cash flow from financial activities.

Effective cash flow management increases the degree of financial and production flexibility of the company, as it leads to:

- to improve operational management, especially in terms of balancing receipts and spending of funds;
- an increase in sales and cost optimization due to the large possibilities of maneuvering the resources of the enterprise;
- improving the efficiency of management of debt obligations and the cost of their service, improving the terms of negotiations with creditors and suppliers;
- creating a reliable base for assessing the performance of each of the divisions of the enterprise, its financial condition as a whole;
- increasing the liquidity of the enterprise.

Main part

All three types of activity take place at each enterprise.

The cash flow from investing activities as an outflow includes, first of all, the costs for the creation and commissioning of new fixed assets and the liquidation, replacement or reimbursement of retired existing fixed assets, allocated by the steps of the calculation period. In addition, changes in working capital are included in the cash flow from investing activities (an increase is considered an outflow of funds, a decrease is an inflow). The outflow also includes own funds invested in the deposit, as well as the cost of purchasing securities of other economic entities intended to finance the project.

Cash inflows from investing activities include income from disposal of retired assets (sale of footwear or sale of obsolete equipment).

Cash flows from operating activities include all types of income and expenses at the appropriate step of the calculation associated with the production of products, and taxes paid on these incomes.

The main inflows are income from product sales and other income. Production volumes should be indicated in physical and value terms. The initial information for determining the proceeds from the

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sale of products is set in steps of calculation for each type of product.

In addition to proceeds from sales in the inflows and outflows of real money, it is necessary to take into account income and expenses from non-production operations that are not directly related to the production of products. These include, in particular:

- income from renting or leasing property;
- receipts of funds upon closing deposit accounts and for purchased securities;
- repayment of loans provided to other participants.

Outflows from operating activities are formed from the costs of production and distribution of products, which usually consist of production costs and taxes.

Financial activities include transactions with funds external to the investment project, i.e. coming not at the expense of the project. They consist of equity (equity) capital and borrowed funds.

Cash flows from financial activities as inflows include investments of equity capital and borrowed funds: subsidies and grants, borrowed funds, including through the issuance of its own debt securities by the enterprise; outflows - the cost of returning and servicing loans and debt securities issued by the company, as well as, if necessary, for the payment of dividends on the company's shares.

Cash flows from financial activities are largely formed when developing a financing scheme and in the process of calculating the effectiveness of an investment project.

If the manufactured shoes are not fully sold, the enterprise loses part of the profit, which is necessary for the further development of production. To reduce losses, the manufacturer must have daily information on product sales and make decisions on timely changes in prices for specific shoe models.

Software was developed to calculate cash inflows from operating activities. This software is necessary for the sales manager or for the marketer who oversees the sales process of a particular model being released. As a result of the proposed calculation, we obtain a net inflow from operating activities. A decrease in sales leads to a decrease in cash flow and requires a decrease in the selling price of the product in order to increase sales. If such an event does not lead to an increase in cash flow, then the question arises about the advisability of further releasing this model.

The algorithm for calculating cash flows from operating activities is implemented using software Microsoft Excel product that can be installed in the workplace of almost any professional.

For this calculation, it is important to differentiate the data involved in the calculation. For calculating the cost of a particular model being produced, the initial data are fixed and variable costs, which depend on the production equipment, the composition of basic and auxiliary materials, the number of employees, etc. In the Excel spreadsheet, the cells into which these data are entered are highlighted in color. In the process of monitoring the sales of a particular model, this data remains unchanged. For another model, the data is adjusted.

The calculation also contains data that does not depend on the model and is entered into the calculation table once. They are highlighted in color. Calculation formulas are also highlighted in color, they are recalculated automatically when the initial data changes. The main initial data that are used in the monitoring process are the selling price of a unit of production and the volume of sales.

Thus, the calculation can be performed daily, or in a selectable time range, while setting only the sales volume and unit price for a certain period, we will receive an increment in the cash flow for this period.

To assess the effectiveness of the production activity of a shoe enterprise, it is necessary to analyze the annual results of the enterprise for the production of men's, women's and children's footwear, that is, the entire assortment.

When 60% of footwear is sold, the company's activities generate insignificant income. Basically, this income is achieved through the sale of men's shoes, since losses are observed in the women's assortment with these volumes. A further decrease in sales volumes will lead to an increase in losses. To solve this problem, the conditions for the sale of shoes in a specified period of time are necessary, as well as the volume of sales of at least 50%. If such a situation arises, it is necessary to attract borrowed funds to cover costs and the subsequent release of products. Table 1 shows the relationship between revenue, costs and production volume using the example of winter children's shoes. managing which you can analyze the financial results of the enterprise and make timely decisions on replacing an assortment that is not in demand.

Table 1. Influence of the sale of footwear on the financial condition of enterprises on the example of winter children's footwear (model A)

Indicators	The value of the indicator for different volumes of sales per month (%)						
	100	80	72	60	40	30	20
Volume of sales,	31020	24816	22334	18612	12408	9306	6204

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steam							
Price of one pair, rub.	890.9	890.9	890.9	890.9	890.9	890.9	890.9
Sales proceeds, thousand rubles	27635.72	22108.57	19897.36	16581.43	11054.28	8290.72	5527.14
Unit cost, thousand rubles	795.41	795.41	795.41	795.41	795.41	795.41	795.41
Full cost price, thousand rubles, including	24673.63	21307.73	19897.36	18121.82	14845.93	13207.98	11570.03
Conditional fixed costs, thousand rubles	8294.13	8294.13	8294.13	8294.13	8294.13	8294.13	8294.13
Conditional variable costs, thousand rubles	16379.5	13013.6	11629.44	9827.69	6551.8	4913.85	327.59
Profit (+)	2962.09	800.84	-	-	-	-	-
Loss (-) from sales, thousand rubles	-	-	0	-1540.39	-3791.93	-4917.26	-6042.89
Taxes, thousand rubles	592,418	160,168	-	-	-	-	-
Net profit, thousand rubles	2369,672	640,672	-	-	-	-	-

The implementation of almost all types of financial transactions of an enterprise generates a certain cash flow in the form of their receipt or expenditure. This cash flow of a functioning enterprise over time is a continuous process and is defined by the concept of "cash flow".

The cash flow of an enterprise is a set of distributed over time receipts and payments of cash generated by its economic activities.

The concept of an enterprise's cash flow as an independent object of financial management has not yet received sufficient reflection not only in domestic, but also in foreign literature on financial management. The applied aspects of this concept are usually considered only as part of the management of balances of monetary assets, management of the formation of financial resources and anti-crisis management of an enterprise with a threat of bankruptcy. Even the financial statements characterizing the movement of the enterprise's funds in dynamics have been relatively recently introduced into the system of international accounting standards (in our country, such reporting is in its infancy).

At the same time, the cash flows of an enterprise in all their forms and types, and, accordingly, its total cash flow, are undoubtedly the most important independent object of financial management, requiring a deepening of the theoretical foundations and expansion of practical recommendations. This is determined by the role that cash flow management plays in the development of the enterprise and the formation of the final results of its financial activities.

The high role of effective management of enterprise cash flows is determined by the following basic provisions:

- cash flows serve the implementation of the economic activity of the enterprise in almost all its aspects. Figuratively, the cash flow can be represented as a system of "financial blood circulation" of the economic organism of the enterprise. Effectively organized cash flows of an enterprise are the most important symptom of its "financial health", a prerequisite for achieving high end results of its economic activity as a whole;

- effective management of cash flows ensures the financial balance of the enterprise in the process of its strategic development. The pace of this development, the financial stability of the enterprise is largely determined by how different types of cash flows are synchronized with each other in terms of volume and time. The high level of such synchronization provides a significant acceleration in the implementation of the strategic development goals of the enterprise .;

- rational formation of cash flows helps to increase the rhythm of the implementation of the operational process of the enterprise. Any failure in making payments adversely affects the formation of production stocks of raw materials and materials, the level of labor productivity, the sale of finished products, etc. At the same time, efficiently organized cash flows of the enterprise, increasing the rhythm of the implementation of the operational process, provide an increase in the volume of production and sales of its products;

- effective management of cash flows allows you to reduce the company's need for borrowed capital. By actively managing cash flows, you can ensure a more rational and economical use of your own financial resources generated from internal sources, reduce the dependence of the rate of development of an enterprise on attracted loans;

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- this aspect of cash flow management acquires particular relevance for enterprises in the early stages of their life cycle, whose access to external sources of financing is rather limited;

- cash flow management is an important financial lever to accelerate the capital turnover of an enterprise. This is facilitated by a reduction in the duration of production and financial cycles, achieved in the process of effective cash flow management, as well as a decrease in the need for capital serving the economic activities of the enterprise. By accelerating capital turnover due to effective management of cash flows, the company ensures an increase in the amount of profit generated over time;

- effective management of cash flows ensures the reduction of the risk of insolvency of the enterprise. Even for enterprises that successfully carry out economic activities and generate a sufficient amount of profit, insolvency can arise as a consequence of the imbalance of various types of cash flows over time. Synchronization of the receipt and payment of funds, achieved in the process of managing the company's cash flows, eliminates this factor of the emergence of its insolvency;

- active forms of cash flow management allow the company to receive additional profit generated directly by its cash assets.

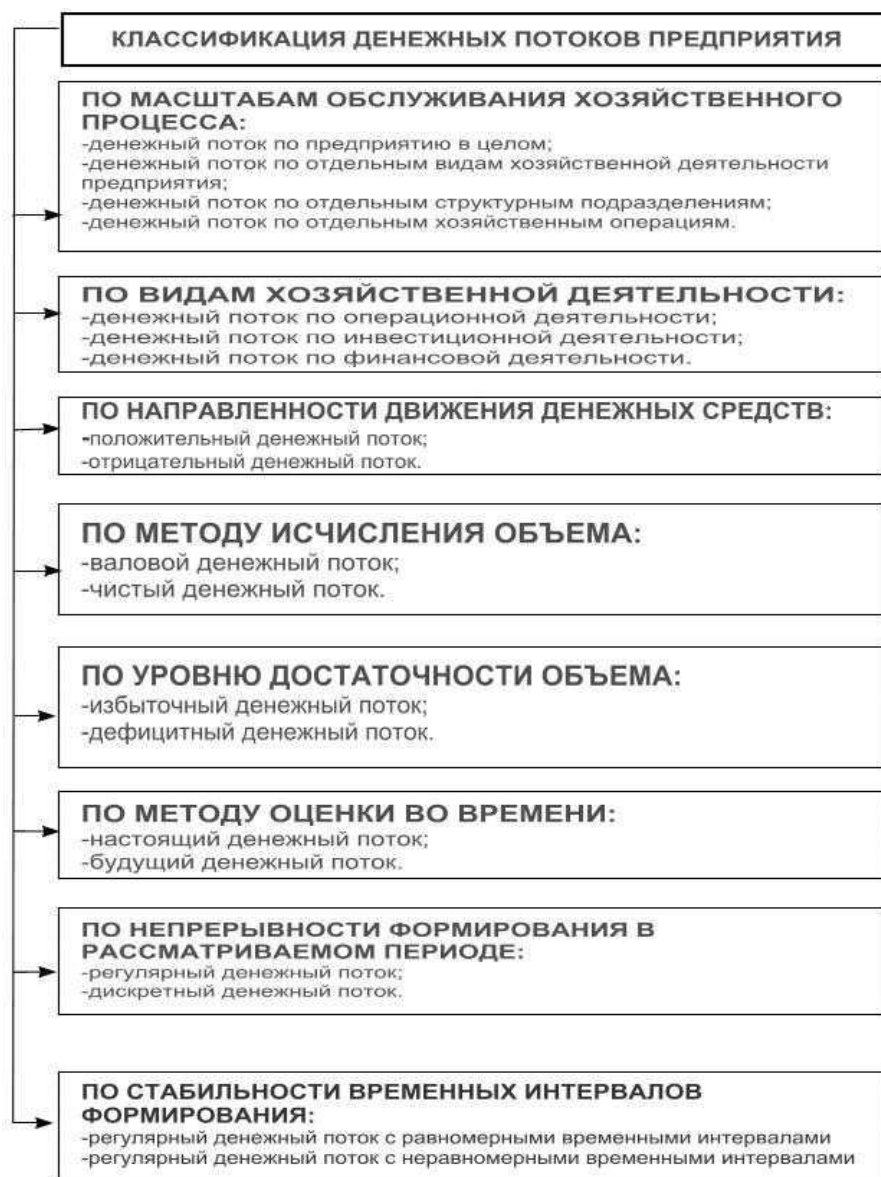


Figure 1 - Classification of cash flows

This is, first of all, about the effective use of temporarily free cash balances in the composition of current assets, as well as the accumulated investment

resources in the implementation of financial investments. A high level of synchronization in terms of volume and time of receipts and payments of funds

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allows to reduce the real need of the enterprise in the current and insurance balances of funds serving the operational process, as well as the reserve of investment resources formed in the process of real investment. Thus, effective management of the company's cash flows contributes to the formation of additional investment resources for the implementation of financial investments, which are a source of profit.

The considered aspects confirm the thesis about the need to separate the cash flows of the enterprise into an independent object of financial management with the appropriate structural and personnel support of this management.

The concept of "cash flow of the enterprise" is aggregated, which includes numerous types of these flows serving economic activities. In order to ensure effective targeted cash flow management, they require a certain classification.

The classification of cash flows is proposed to be carried out according to several main features, Figure 1.

The considered classification allows for more purposeful accounting, analysis and planning of cash flows of various types at the enterprise.

The concept of researching cash flows of an enterprise assumes:

- identification of the company's cash flows by their individual types;
- determination of the total volume of cash flows of certain types in the period under review.

The system of main indicators characterizing the volume of the generated cash flows of the enterprise includes:

- the volume of funds received;
- the amount of money spent;
- the volume of cash balances at the beginning and end of the period under review;
- the volume of net cash flow;
- the distribution of the total volume of cash flows of certain types for individual intervals of the period under consideration. The number and duration of such intervals is determined by specific tasks of analysis or planning of cash flows;
- assessment of internal and external factors affecting the formation of the company's cash flows.

Taking into account the content of this concept, cash flow management is organized as an independent object of financial management. Cash flow management of the company is an important part of the overall management system of its financial activities. It allows you to solve various problems of financial management, and is subordinated to its main goal.

The process of managing the company's cash flows is based on certain principles, the main of which are:

- the principle of informative reliability. Like every management system, the management of the

company's cash flows must be provided with the necessary information base. The creation of such an information base presents certain difficulties, since there is no direct financial reporting based on uniform accounting methodological principles. Certain international standards for the formation of such reporting began to be developed only since 1971 and, according to many experts, are still far from complete (although the general parameters of such standards have already been approved, they allow for variability in methods for determining individual indicators of the adopted reporting system). Differences in accounting methods in our country from those adopted in international practice further complicate the task of forming a reliable information base for enterprise cash flow management. Under these conditions, ensuring the principle of informative reliability is associated with the implementation of complex calculations that require unification of methodological approaches;

- the principle of ensuring balance. The management of cash flows of the enterprise deals with many of their types and varieties, considered in the process of their classification. Their subordination to common goals and objectives of management requires ensuring a balance of cash flows of the enterprise by type, volume, time intervals and other essential characteristics. The implementation of this principle is associated with the optimization of the company's cash flows in the process of managing them;

- the principle of ensuring efficiency. The cash flows of the enterprise are characterized by a significant unevenness of the receipt and expenditure of funds in the context of individual time intervals, which leads to the formation of significant volumes of temporarily free cash assets of the enterprise. In essence, these temporarily free cash balances are in the nature of unproductive assets (until they are used in the business process), which lose their value over time, from inflation and for other reasons. The implementation of the principle of efficiency in the process of managing cash flows is to ensure their effective use by making financial investments of the enterprise;

- the principle of ensuring liquidity. The high unevenness of certain types of cash flows gives rise to a temporary shortage of funds of the enterprise, which negatively affects the level of its solvency. Therefore, in the process of managing cash flows, it is necessary to ensure a sufficient level of their liquidity throughout the entire period under review. The implementation of this principle is ensured by appropriate synchronization of positive and negative cash flows in the context of each time interval of the considered period.

Taking into account the considered principles, a specific process for managing the enterprise's cash flows is organized.

The main goal of cash flow management is to ensure the financial balance of the enterprise in the

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process of its development by balancing the volumes of receipts and expenditures of funds and their synchronization in time. Cash flow analysis and cash flow management includes calculating the time of circulation of cash (financial cycle), analyzing cash flow, forecasting it, determining the optimal level of cash, drawing up cash budgets. Let's list the main tasks of cash analysis:

- operational, day-to-day control over the safety of cash and securities at the cash desk of the enterprise;
- control over the targeted use of funds;
- control over correct and timely calculations with the budget, suppliers and personnel;
- control over compliance with the payment forms established in contracts with buyers and suppliers;
- timely reconciliation of settlements with debtors and creditors to exclude overdue debt;
- analysis of the state of the absolute liquidity of the enterprise;
- Compliance with the terms of payment of accounts payable;
- contributing to the competent management of the enterprise's cash flows.

There are two methods for conducting cash flow analysis: direct and indirect.

The direct method assumes the calculation of the income (proceeds from the sale of products, works and services, advances received, etc.) and expenses (payment of suppliers' bills, return of received short-term loans and borrowings, etc.) of monetary funds, i.e. the information base for the analysis of cash flow is revenue.

The indirect method is based on the identification and accounting of transactions related to cash flows, and a consistent adjustment of net profit, i.e. the initial element is profit.

The direct calculation method is based on reflecting the results of transactions (turnovers) on cash accounts for a period. In this case, operations are grouped into three types of activities:

- current (operational) activities - receipt of proceeds from sales, advances, payment on suppliers' invoices, obtaining short-term loans and borrowings, payment of wages, payments to the budget, paid / received interest on loans and borrowings;
- investment activity - the movement of funds associated with the acquisition or sale of fixed assets and intangible assets;
- financial activities - obtaining long-term loans and borrowings, long-term and short-term financial investments, repayment of debts on previously received loans, payment of dividends.

Calculation of cash flow by the direct method makes it possible to assess the solvency of the enterprise, as well as to exercise operational control over the inflow and outflow of funds.

The indirect method is preferable from an analytical point of view, as it allows you to determine the relationship between the profit received and the change in the amount of funds. The calculation of cash flows using this method is based on the net profit indicator with the necessary adjustments in items that do not reflect the movement of real money in the corresponding accounts.

To eliminate discrepancies in the formation of the net financial result and net cash flow, adjustments are made to the net profit or loss, taking into account:

- changes in inventories, accounts receivable, short-term financial investments, short-term liabilities, excluding loans and credits, during the period;
- non-monetary items: amortization of non-current assets; exchange differences; profit (loss) of previous years, revealed in the reporting period, and more;
- other items that should be reflected in investment and financial activities.

The direct method is based on the calculation of cash inflows and outflows, that is, the initial element is the actual cash flow, identified according to the data of the accounting accounts. The direct method involves identifying all transactions that affect the debit of cash accounts (cash inflows) and credit of cash accounts (cash outflows). A sequential view of all postings provides, among other things, the grouping of outflows and inflows of funds by the above-isolated activities (current, investment, etc.). Since when implementing the direct method of analysis, calculations are made on the basis of accounts, from a formal standpoint, cash flow analysis can be performed on any date.

The direct method of analysis of cash flows allows:

- to assess whether a sufficient net cash flow is formed as a result of current activities for its implementation and planned investment activities;
- Is financial activity necessary as a balancing activity and what should be the amounts and directions of cash flows on it;
- what are the main directions of spending and the main sources of income for each of the three types of activities and for the organization as a whole;
- how will the cash flows for the period affect the level of cash balances at the end of the period;
- what is the structure of the organization's cash flows by type of activity, as well as what cash flows form the net cash flow for each type of activity.

In the course of the analysis, it is necessary to calculate indicators of the structure of receipts and payments by type of activity, as well as indicators of dynamics (growth rates) of receipts and payments.

When evaluating net cash flows by type of activity, it is necessary to keep in mind the following:

- the net cash flow from current activities should be positive. A positive cash flow from current

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activities is evidence of the successful activities of the organization and the possibility of further development at its own expense;

- the net cash flow from investment activities should be negative (that is, payments should exceed receipts; since investment activities are associated with the acquisition and sale of non-current assets), this indicates that significant investments are being made in non-current assets and, probably, production enterprise capacity;

- the net cash flow from financial activities should be positive (since this activity is associated

with a change in its own invested capital and borrowed funds), this indicates that the organization is financing its expanding activities from external sources (and not only retained earnings and accounts payable;

- for a stable developing organization, payments and receipts from current activities should prevail in total receipts and payments.

A growing organization is characterized by a positive growth rate of cash flow indicators, which should correspond to the dynamics of financial results.

In table 2, we consider the main cash flows for men's and women's shoes:

Table 2. Major cash flows for men's and women's shoes

Index	male	female	Total
Funds received from buyers and customers, rub.	206588280	359618900	566207180
Payment for goods, works, services, raw materials and other circulating assets, rub.	1335169.03	2371190.52	3706359.55
Labor remuneration, rub.	1845241.1	1778400	3623641.1

Let's analyze the cash flow using the direct method. To do this, we will calculate the following data:

- income tax (20%) - 566207180 rubles * 0.2 = 113241436 rubles;

- to the federal budget (0.4%) - 566,207,180 rubles * 0.004 = 2,264,828.72 rubles;

- to the territorial budget (3.6%) - 566207180 rubles * 0.036 = 20383458.48 rubles;

- insurance premiums to off-budget funds (30%):

- a) Pension fund (22%) - 3,623,641.1 rubles * 0.22 = 797,201.042 rubles;

- b) Social Insurance Fund (2.9%) - 3623641.1 rubles * 0.029 = 105,085.5919 rubles;

- c) Mandatory Health Insurance Fund (5.1%) - 3623641.1 rubles * 0.051 = 184805.6961 rubles;

- d) Total insurance premiums - 797201.042 + 105085.5919 + 184805.6961 = 1087092.33 rubles;

- net cash flows from current activities amounted to 422987456.15 rubles;

- the purchase of fixed assets will cost RUB 1,000,000,000 (net cash from investment activities is in the red);

- targeted financial receipts to support small businesses amounted to 1,500,000,000 rubles (net cash from financial activities in positive territory);

- cash balance at the end of the reporting period 922987456.2 rubles.

Let's compose table 3 for the analysis of cash flows by the direct method:

Table 3. Direct cash flow analysis

Index	Amount, rub.
Cash balance at the beginning of the reporting year	0
Cash flow from current activities	
Funds received from buyers, customers	566207180
Other income	0
Funds directed to:	
to pay for purchased goods, works, services, raw materials and other current assets	-3706359.55
for wages	-3623641.1
To pay taxes and deductions in total:	-135889723.2
Income tax (20%)	-113241436
Federal budget (0.4%)	-2264828.72
Territorial budget (3.6%)	-20383458.48
For insurance premiums to off-budget funds (30%) in total:	-1087092.33
Pension fund (22%)	-797201.042
Social Insurance Fund (2.9%)	-105085.5919

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Index	Amount, rub.
Federal Mandatory Health Insurance Fund (5.1%)	-184805.6961
Net cash from current activities	422987456.15
Cash flows from investing activities	
Proceeds from the sale of fixed assets and other non-current assets	0
Interest received	0
Acquisition of fixed assets, profitable investments in tangible assets and intangible assets	-1 000 000 000
Purchase of securities and other financial investments	0
Loans to other organizations	0
Net cash from investing activities	-1 000 000 000
Cash flows from financing activities	
Targeted financial receipts (to support small businesses)	1,500,000,000
Repayment of loans and credits (without interest)	0
Net cash from financing activities	1,500,000,000
Cash balance at the end of the reporting period	922987456.2

The receipt of funds in the first year of the implementation of the cluster will be: $\Delta C = 922987456.2$ rubles.

Thus, the inflow of funds will amount to 922987456.2 rubles, since this is a positive and rather large value, it can be assumed that the creation of a cluster is effective. The production and economic activity of each enterprise is fraught with the difficult task of managing cash flows, regardless of the economic conditions in which it is located. Effective management of monetary resources in modern economic conditions is extremely relevant, since the financial condition of many of them can be characterized as extremely unstable. At enterprises, in most cases, there is no proper organization of the financial system, there is no relationship between structural units, and their functions are not established and delimited. Lack of qualified specialists leads to ineffective use of funds.

In modern conditions, the deepening of the theoretical base and the expansion of practical recommendations is the basis for improving the cash flow management system of enterprises, which are traditionally the most important independent object of financial management. At the same time, the development of new forms and methods of cash flow management with a focus on the specifics of the enterprise's activities is of particular importance.

As a basis for creating an effective system of cash flow management at the enterprise, the proposed model of cash flow management can be taken. The proposed model describes the stages of the functional content of cash flow management activities at the enterprise. Its implementation will allow, through a series of sequential analytical operations, to create a cash flow management system. The process of implementing this model in stages:

1. Planning the development of a cash flow management system.

2. Analysis of cash flows in the previous period.

3. Optimization of cash flows based on the results obtained.

4. Planning cash flows of the enterprise in the context of their individual types.

5. Providing a system of effective control over the cash flows of the enterprise.

Each of the listed stages consists of sequential steps of actions.

Stage 1. Planning the development of a cash flow management system "consists of the following steps:

Step 1.1. Determination of the goals and objectives of the cash flow management system. This step will help company managers to understand the need to manage cash flows. Objectives should focus on defining the scope of cash flow management problems and identifying specific projects for improvement.

Step 1.2. Determination of the main criteria for cash flow management. To achieve this goal, it is necessary to determine the main criteria for managing cash flows, while compiling an approximate list of them.

Step 1.3. Classification of cash flows of the enterprise according to the main characteristics. In contrast to the previous step, a complex classification characteristic of the enterprise's cash flows is being developed here, which, depending on the type of the task at hand, makes it possible to assess and select the area of managerial impact. The classification of cash flows allows you to purposefully carry out accounting, analysis and planning of cash flows at the enterprise.

Step 1.4. Selection of departments responsible for providing information, analysis, optimization, planning and control over cash flows. At this stage, it

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is necessary to justify the choice of a particular service responsible for providing data, as well as those directly responsible for analysis, optimization, cash flow planning and control over the implementation of managerial decisions in this direction. It is advisable to assign these functions to the accounting department of the enterprise, the economic (planning) department and the financial and analytical service (if such a service is created at the enterprise), distributing responsibilities according to their capabilities. To achieve the greatest effect from cash flow management, it is necessary to achieve interconnection in the work of these divisions.

Stage 2. Analysis of the company's cash flows in the previous period:

Step 2.1. Determination of information sources - the main sources of information, internal and external, necessary for the analysis of the company's cash flows are determined. The main sources of data are the forms of the company's financial statements, which are compiled by the accounting department. Obtaining information from external sources can be carried out either by the economic department or by the financial and analytical service of the enterprise, depending on the characteristics of the required data.

Step 2.2. Vertical and horizontal analysis of the company's cash flows. This step is an important part of the entire stage. The direct object of analysis is the data of the financial statements of the enterprise. Horizontal analysis is based on the calculation of analytical indicators for each analytical article (based on Form No. 1 of the financial statements) in the form of absolute changes, identifying patterns and reasons for changes. Vertical analysis is based on the consideration of structural changes in the flow of funds, their spending, as well as the reasons for their occurrence.

Step 2.3. Identification of factors affecting the cash flows of the enterprise. This action is to develop a system of factors affecting cash flows. In the process of its implementation, the features of the functioning of the enterprise, the features of the flow of funds are determined. The developed system of factors will help to determine the objects of management influence.

Step 2.4. Calculation of financial indicators. At this stage, the net cash flow, liquidity indicators, cash flow efficiency turnover are calculated, and the results of the calculations of individual indicators are compared with the upper and lower limits. The reasons for the deviations are identified. The calculation of indicators will allow you to assess the financial condition of the enterprise and the level of solvency.

Stage 3. Optimization of cash flows based on the results obtained:

Step 3.1. Development of a cash flow optimization subsystem - involves the optimization of cash flows in two directions:

- assessment of the adequacy of the net cash flow;
- calculation of the optimal balance of funds.

The significance of these areas lies in the fact that, firstly, the net cash flow is the main effective indicator of cash flow, and secondly, the positive value of the cash flow for a certain period does not guarantee the constant solvency of the enterprise throughout the entire period, therefore, it is necessary to calculate the optimal balance Money.

The first direction of cash flow optimization is based on identifying and eliminating the causes of negative or excess amount of net cash flow, since in the first case the excess of cash is depreciated in the process of inflation, and in the second case, the company faces the problem of insolvency due to a lack of funds.

Stage 4. Planning cash flows of the enterprise in the context of their individual types. At this stage, it is necessary to take into account all the shortcomings identified in the process of analyzing and optimizing cash flows. To do this, follow these steps:

Step 4.1. Development of documentary forms for planning cash flows. At this stage, a form of a cash flow plan is being developed.

Step 4.2. Drawing up a plan for the flow of funds of the enterprise. This document should include all incoming and outgoing cash flows in the planning period. It is being developed for a period of up to one year with a monthly breakdown of forthcoming receipts and payments. The cash flow plan is an integral part of the financial planning in the enterprise.

Stage 5. Providing the system with effective control over cash flows. This stage implies checking the execution of all management decisions in the field of cash flows, monitoring the progress of financial assignments, developing operational management decisions to normalize the enterprise's cash flows in accordance with the envisaged tasks, adjusting the cash flow management policy due to changes in various factors affecting cash flows. streams.

Thus, the developed cash flow management model is a sequence of steps to organize an effective cash flow management system, which will maintain the financial balance of the enterprise in the process of its production and economic activities and ensure the smooth operation of production.

We will calculate the inflows and outflows of funds from production and investment activities, which are presented in table 4

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Table 4. Cash inflows and outflows as a result of the implementation of the work done

Indicator name	Cash inflows (+)	Cash outflows (-)
Receipt of funds from buyers (sales proceeds, rubles)	+568637650	
Cash payments for raw materials to suppliers and wages to employees of the enterprise, rubles.		-17547479.15
Taxes, RUB total		
1. Taxes on profits, total rub.		-113727530
Federal budget		-2274550.6
Territorial budget		-20470955.4
2. Insurance premiums, rub.		-5264243.74
Including:		
-Pension Fund		-3860445.41
-Social Insurance Fund		-508876.9
-Federal Fund of Compulsory Medical. insurance		-894921.43
Purchase of fixed assets, rub.		-1000000000
Targeted financial receipts (under the small business support program), rub.	+1500000000	
Total	+ 2068637650	- 1164549002.63

The receipt of funds in the first year of the project will be:

$DS = 2068637650 - 1164549002.63 = 904088647.37$ rubles. Thus, the cash inflow will amount to 904,088,647.37 rubles, since this is a positive value, it can be assumed that the project is effective.

Tables 6 - 8 and Figures 2 - 4 show options for constructing a break-even point with the formation of not only the volume of output, but also during what number of days it must be produced and sold in order to ensure the return of the costs incurred for its production and guarantee the enterprise to obtain high TPE and bankruptcy warning.

Table 5

Финансовые результаты при различных объёмах продаж зимних ботинок (модель А) - мужские

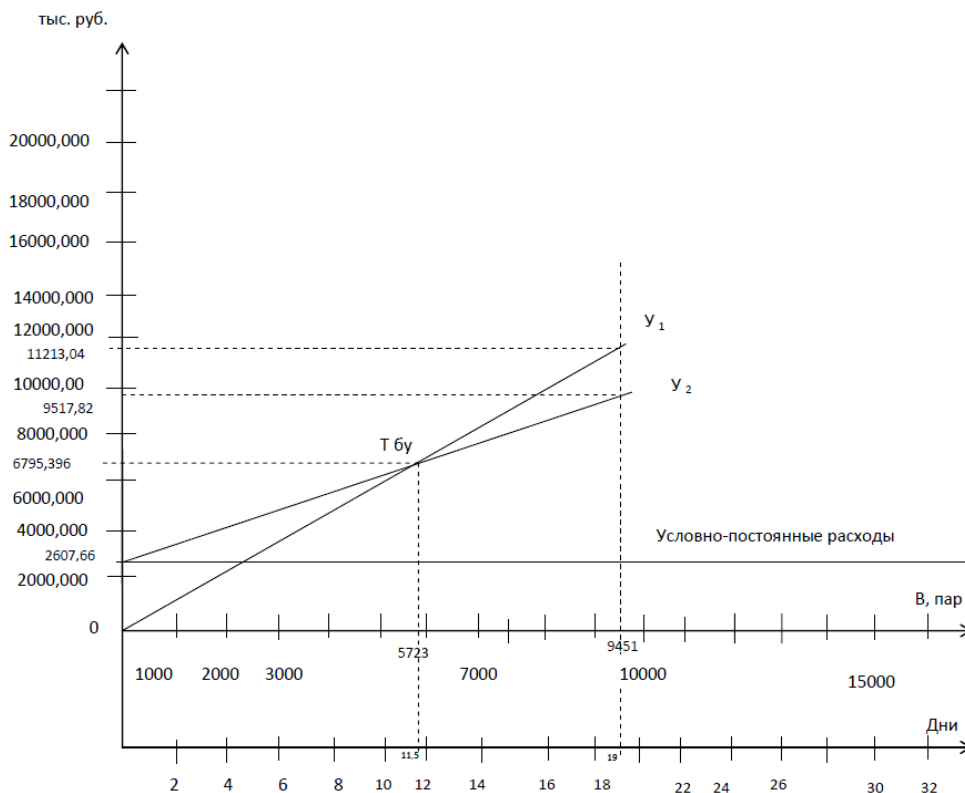
Показатели	Значение показателя при различных объёмах продаж в месяц (%)					
	100	80	60	48,1	40	30
Объём продаж, пар	15752	12601	9451	7576,71	6300	4725
Цена одной пары, руб.	1186,44	1186,44	1186,44	1186,44	1186,44	1186,44
Выручка от продаж, тыс. руб.	18 688,8	14 950,33	11 213,04	8989,31	7474,57	5605,93
Себестоимость единицы, тыс. руб.	1007,07	1007,07	1007,07	1007,07	1007,07	1007,07
Полная себестоимость, тыс. руб., в том числе:	15 863,36	12 690,1	9517,82	8989,31	8952,2	6583,86
Условно-постоянные расходы, тыс. руб.	2607,66	2607,66	2607,66	2607,66	2607,66	2607,66
Условно-переменные расходы, тыс. руб.	13 255,72	10 082,44	6910,16	6376	6344,54	3976,2
Прибыль (+) Убыток (-) от продаж, тыс. руб.	2825,44	2260,23	1695,22	0	-	-
Налоги, тыс. руб.	565,088	452,05	339,044	-	-	-
Чистая прибыль, тыс. руб.	2260,35	1808,2	1356,2	-	-	72

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Модель А 60%

МУЖСКАЯ



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Figure 2 - Break-even point of model A (winter boots for men) with a sales volume of 60%

Table 6

Влияние реализации на финансовое состояние предприятий (детская обувь модель А) - детские

Показатели	Значение показателя при различных объемах продаж в месяц (%)						
	100	80	72	60	40	30	20
Объем продаж, пар	31020	24816	22334	18612	12408	9306	6204
Цена одной пары, руб.	890,9	890,9	890,9	890,9	890,9	890,9	890,9
Выручка от продаж, тыс. руб.	27635,72	22108,57	19897,36	16581,43	11054,28	8290,72	5527,14
Себестоимость единицы, тыс. руб.	795,41	795,41	795,41	795,41	795,41	795,41	795,41
Полная себестоимость, тыс. руб., в том числе	24673,63	21307,73	19897,36	18121,82	14845,93	13207,98	11570,03
Условно-постоянные расходы, тыс. руб.	8294,13	8294,13	8294,13	8294,13	8294,13	8294,13	8294,13
Условно-переменные расходы, тыс. руб.	16379,5	13013,6	11629,44	9827,69	6551,8	4913,85	327,59
Прибыль (+) Убыток (-) от продаж, тыс. руб.	2962,09	800,84	0	-	-	-	-
	-	-	-	-1540,39	-3791,93	-4917,26	-6042,89
Налоги, тыс. руб.	592,418	160,168	-	-	-	-	-
Чистая прибыль, тыс. руб.	2369,672	640,672	-	-	-	-	-

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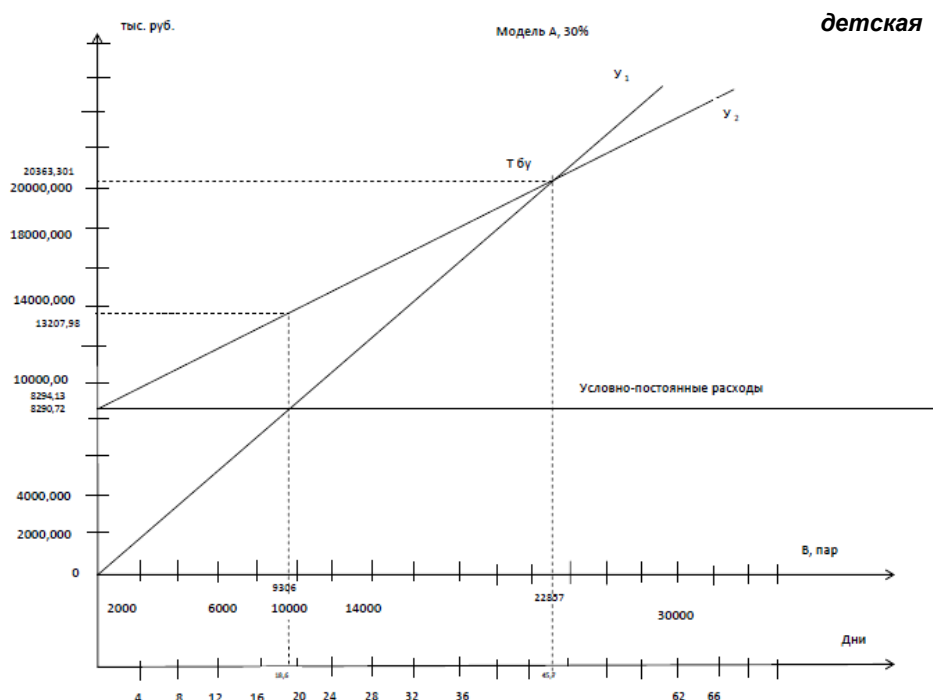


Figure 3 - Break-even current model A (children's shoes) with a sales volume of 30%

Table 7

Влияние реализации обуви на финансовое состояние предприятий (женская обувь модель А - летние туфли)

Показатели	Значение показателя при различных объемах продаж в месяц, %					
	100	80	70	63,73	60	50
Объем продаж, пар	12656	10125	8859	8065	7594	6328
Цена одной пары, руб.	974,58	974,58	974,58	974,58	974,58	974,58
Выручка от продаж, тыс. руб.	12334,28	9867,62	8633,8	7859,99	7400,96	6167,14
Себестоимость единицы, руб.	844,31	844,31	844,31	844,31	844,31	844,31
Полная себестоимость, тыс. руб.	10685,6	9127,93	8348,79	7859,99	7570,27	6791,13
Условно-постоянные расходы, тыс. руб.	2896,65	2896,65	2896,65	2896,65	2896,65	2896,65
Условно-переменные расходы, тыс. руб.	7788,95	6231,28	5452,14	4963,34	4673,62	3894,48
Прибыль от продаж, тыс. руб.	1648,68	739,69	285,01	0	-	-
Убыток от продаж, тыс. руб.	-	-	-	-	-169,31	-623,99
Налоги, тыс. руб.	329,74	147,94	57	-	-	-
Чистая прибыль, тыс. руб.	1318,94	591,75	228,01	-	-	-

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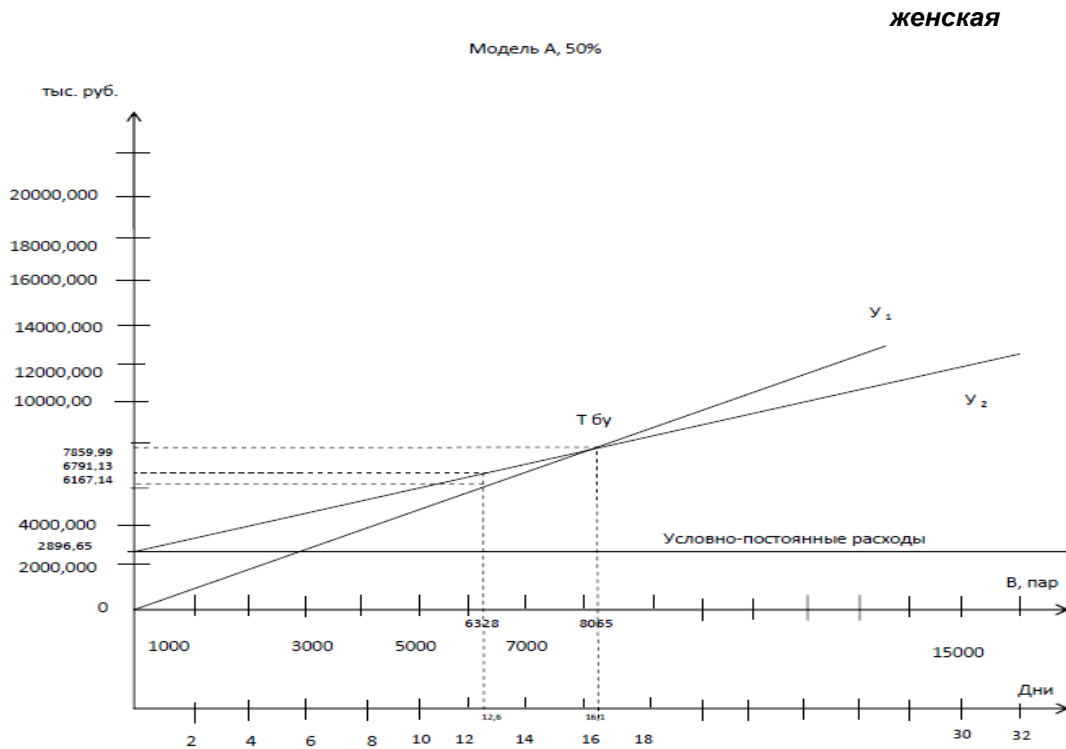


Figure 4 - Break-even current model A (women's summer shoes) with a sales volume of 50%

To select the optimal capacity, the authors have developed software that allows manufacturers, based on an innovative technological process using universal and multifunctional equipment, to produce the entire assortment of shoes with minimum, average and maximum costs, which creates the basis for varying the price niche, including through a gradual increase in the share of domestic components in the production of leather goods with a significant reduction in the cost of its manufacture. At the same time, as the criteria for a reasonable choice of the optimal power when forming the algorithm, it was justified to choose exactly those criteria that have the greatest impact on the cost of the finished product, namely:

- coefficient of workload of workers, %;
- productivity of labor of one worker, a pair;
- losses on wages per unit of production, rubles;
- specific reduced costs for 100 pairs of shoes, rub.

Of the four given criteria, in our opinion, the main ones are labor productivity of 1 worker and unit reduced costs.

Labor productivity of 1 worker is the most important labor indicator. All the main indicators of production efficiency and all labor indicators, to one degree or another, depend on the level and dynamics of labor productivity: production of products, number of employees, expenditure of wages, level of wages, etc.

To increase labor productivity, the introduction of new equipment and technology, widespread

mechanization of labor-intensive work, automation of production processes, advanced training of workers and employees, especially when introducing innovative technological processes based on universal and multifunctional equipment, are of paramount importance.

Specific reduced costs - an indicator of the comparative economic efficiency of capital investments, used when choosing the best option for solving technological problems.

When comparing possible options for solving any technical problem, rationalization proposals, technical improvements, various ways to improve product quality, the best option, all other things being equal, is considered the option that requires a minimum of reduced costs.

The given costs are the sum of current costs taken into account in the cost of production and one-time capital investments, the comparability of which with current costs is achieved by multiplying them by the standard coefficient of the efficiency of capital investments. Tables 8 and 9 show the calculations of the optimal power for the range from 300 to 900 pairs for men's and women's shoes for the entire range of footwear. Analysis of the obtained characteristics for three variants of a given technological process in the manufacture of the entire assortment of footwear confirmed the effectiveness of the software product for evaluating the proposed innovative technological process using universal and multifunctional equipment. So, with a range of 300 - 900 pairs, the best according to the given criteria is the volume of

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production of 889 pairs (for men) and 847 pairs (for women). If the production areas proposed by the regional and municipal authorities of the two districts - the Southern Federal District and the North Caucasus Federal District, according to the standard indicators, do not allow the calculated production volumes to be realized, then the option of the optimal capacity is chosen that is acceptable, for example, the production volume of 556 pairs, which corresponds to the standard indicators for the proposed production areas and is characterized by the best values of the

designated criteria, which form the cost of the entire assortment of footwear. The authors developed consolidated technological processes on the side of the shoe upper blank and for the assembly of shoes, respectively, for 12 models of men's and 12 models of women's shoes (Figures 5 and 6). Tables 8 and 14 show an example of the initial technological process for assembling the upper and shoe blanks using the example of a men's winter boot (model D). The summarized volumes of the main costs are shown in Table 15.

Table 8. Calculation of the optimal power with a range of 300-900 pairs using the example of men's shoes

Power	Equipment type	Optimal power, steam per shift	Labor productivity of 1 worker, steam	Worker load factor, %	Losses on wages per unit of production, rub	Specific reduced costs for 100 pairs of shoes, rub
300-500	1	500	28.09	61.39	13.68	6735.36
500-700	1	556	27.73	69.14	9.83	6404.71
700-900	1	889	28.09	77.20	6.42	5236.17
300-500	2	500	28.09	61.39	13.68	6728.68
500-700	2	556	27.91	68.70	9.97	6083.28
700-900	2	889	28.09	77.20	6.42	5240.72
300-500	3	500	28.09	61.39	13.68	7533.95
500-700	3	700	28.12	67.28	10.56	6734.02
700-900	3	889	28.09	77.20	6.42	5876.59

Table 9. Calculation of the optimal power with a range of 300-900 couples on the example of women's shoes

Power options	Equipment type	Optimal power, steam per shift	Labor productivity of 1 worker, steam	Worker load factor, %	Losses on wages per unit of production, rub	Specific reduced costs for 100 pairs of shoes, rub
300-500	1	500	27.73	62.18	13.40	6980.5
500-700	1	700	27.73	69.14	9.83	6277.43
700-900	1	847	27.73	74.50	7.54	5673.49
300-500	2	500	24.45	63.90	14.11	7630.92
500-700	2	556	27.73	69.14	9.83	6404.71
700-900	2	812	25.64	75.40	7.77	6060.55
300-500	3	500	27.00	61.74	14.02	7827.12
500-700	3	556	29.32	68.21	9.71	6607.65
700-900	3	847	27.00	74.70	7.66	6341.05

Impact Factor:

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GIF (Australia) = 0.564	ESJI (KZ) = 9.035	IBI (India) = 4.260
JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

Table 10 - Characteristics of the equipment for assembling the blanks of autumn women's boots (model E)

the name of the operation	1 set of equipment for innovative technological process							2 set of equipment for innovative technological process							3 set of equipment for innovative technological process						
	vendor code	weight	manufacturer	dimensions	power	performance	price	vendor code	weight	manufacturer	dimensions	power	performance	price	vendor code	weight	manufacturer	dimensions	power	performance	price
Receiving and checking the cut	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B
Cutting into production	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B
Lowering the edges of the outer baby top and lining	SS 20	135 kg	Comels	1050 * 550 * 1030	1.2 kW	75 pairs per hour	217 140 rub	3SE-RZ	140KG	Fortuna (Germany)	1050 * 540 * 1160	0.5 kW	77 pairs / h	156,000 rubl	01146 / P5	130 Kg	Sweet (Czech)	1050 * 540 * 1190	0.7 kW	63 pairs per hour	178,000 rubl
Duplication of upper details with interlining	A 2000	180 Kg	Sabal (Italy)	1430 * 780 * 950	2.1 kW	150 pairs per hour	RUR 185640	C 1100V	180 Kg	Schön (Germany)	1800 * 130 * 950	0.8 kW	150 pairs per hour	123 150 rub	PR 86 A	180 Kg	NEVE (Italy)	1250 * 900 * 1350	3.1 kW	150 pairs per hour	123500 rub
Bending with simultaneous application of hot melt glue, notching curved sections and gluing tape	RP67TE	180kg	Sagita (Italy)	1100 * 550 * 1270	0.75 kW	60 pairs per hour	402 090 rub	S1031C	170 kg	Schön (Germany)	1050 * 550 * 1200	1.0 kW	60 pairs per hour	234500 rub	01280 / P1	186 kg	Sweet (Czech Republic)	900 * 600 * 1280	0.5 kW	65 pairs per hour	320,700 rubl
Adjusting tibia detail 1 to tibia detail 2	491 GRAMAC	130 Kg	Granucci (Italy)	520 * 180	1.76 kW		211 596 rub	4180i-511 E5 BM00002	130 Kg	Durkopp Adler	900 * 500 * 850	0.27 kW		132090 rub	Pfaff 591-726 cl	130 Kg	Pfaff (Germany)	900 * 500 * 850	0.27		79400 rubl

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Glue ankle boots and elastic bands for assembly. Drying	ST-B with vyt.		491 GRAMAC	Pfaff 574-900 cl						ST-B with vyt.
Gluing ankle boots on elastic bands	ST-B with vyt.	130 Kg	Granucci (Italy)	"PFAFF"						ST-B with vyt.
Attaching elastic bands to the ankle boots with the 1st line	ST-B with vyt.	130 Kg	Granucci (Italy)	520 * 180	520 * 180	0.27 kW				ST-B with vyt.
Tightening the vamp on the ankle boots	ST-B with vyt.	130 Kg	Granucci (Italy)	520 * 180	520 * 180	0.27 kW				ST-B with vyt.
Tapering of the back edges of the ankle boots with a stitch seam	ST-B with vyt.	130 Kg	Granucci (Italy)	520 * 180	520 * 180	0.27 kW				ST-B with vyt.
Smoothing the back seam while applying the tape	DELTA CB	150 Kg	Sarema (Italy)	800 * 1200 * 1740	800 * 1200 * 1740	1.7				ST-B with vyt.
Glueing and gluing ZNR on the heel of the workpiece	ST-B with vyt.		RUB 31080							ST-B with vyt.
	ST-B with vyt.		4180i-511 E5 BM00002	Typical GC24680	Typical GC24680					ST-B with vyt.
	ST-B with vyt.	130 Kg	Durkopp Adler	Typical (China)						ST-B with vyt.
	ST-B with vyt.	900 * 500 * 850		900 * 500 * 850	900 * 500 * 850	0.27 kW				ST-B with vyt.
	ST-B with vyt.	0.27 kW		0.27 kW	0.27 kW					ST-B with vyt.
	ST-B with vyt.	500 pairs / hour		500 pairs / hour						ST-B with vyt.
	ST-B with vyt.	18000 rbl		18000 rbl	58212 rbl					ST-B with vyt.
	ST-B with vyt.	01276 / P12		01276 / P12	Typical GC24026					ST-B with vyt.
	ST-B with vyt.	135 kg		135 kg	130 Kg					ST-B with vyt.
	ST-B with vyt.	"Sweet" Czech		"Sweet" Czech	Pfaff 591-726 cl					ST-B with vyt.
	ST-B with vyt.	900 * 510 * 1380		900 * 510 * 1380	900 * 500 * 850					ST-B with vyt.
	ST-B with vyt.	0.175 kW		0.175 kW	900 * 500 * 850					ST-B with vyt.
	ST-B with vyt.	500 pairs / hour		500 pairs / hour	0.27					ST-B with vyt.
	ST-B with vyt.	18000 rbl		18000 rbl	79400 rbl					ST-B with vyt.

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Top hemming										
	A 2000	DELTA CB	GP 2	491 GRAMAC	491 GRAMAC	491 GRAMAC	491 GRAMAC	491 GRAMAC	491 GRAMAC	ST-B with vyt.
	180 Kg	150 Kg	120 Kg	130 Kg	130 Kg	130 Kg	130 Kg	130 Kg	130 Kg	ST-B with vyt.
	Sabal (Italy)	Sarema (Italy)	Colli (Italy)	Granucci (Italy)	Granucci (Italy)	Granucci (Italy)	Granucci (Italy)	Granucci (Italy)	Granucci (Italy)	ST-B with vyt.
	1430 * 780 * 950	800 * 1200 * 1740	900 * 500 * 850	520 * 180	520 * 180	520 * 180	520 * 180	520 * 180	520 * 180	ST-B with vyt.
	2.1 kW	1.7	0.27 kW	1.76 kW	1.76 kW	1.76 kW	1.76 kW	1.76 kW	1.76 kW	ST-B with vyt.
	150 pairs per hour									ST-B with vyt.
	RUR 185640	RUB 31080	190,000 rubles	211 596 rub	211 596 rub	211 596 rub	211 596 rub	211 596 rub	211 596 rub	ST-B with vyt.
	C 1100V	01276 / P12	GP 2	4180i-511 E5 BM00002	4180i-511 E5 BM00002	4180i-511 E5 BM00002	4180i-511 E5 BM00002	4180i-511 E5 BM00002	4180i-511 E5 BM00002	ST-B with vyt.
	180 Kg	135 kg	120 Kg	130 Kg	130 Kg	130 Kg	130 Kg	130 Kg	130 Kg	ST-B with vyt.
	Schön (Germany)	"Sweet" Czech	Colli (Italy)	Durkopp Adler	Durkopp Adler	Durkopp Adler	Durkopp Adler	Durkopp Adler	Durkopp Adler	ST-B with vyt.
	1800 * 130 * 950	900 * 510 * 1380	900 * 500 * 850	900 * 500 * 850	900 * 500 * 850	900 * 500 * 850	900 * 500 * 850	900 * 500 * 850	900 * 500 * 850	ST-B with vyt.
	0.8 kW	0.175 kW	0.27	0.27 kW	0.27 kW	0.27 kW	0.27 kW	0.27 kW	0.27 kW	ST-B with vyt.
	150 pairs per hour	500 pairs / hour								ST-B with vyt.
	123 150 rub	18000 rbl	190,000 rubles	132090 rub	132090 rub	132090 rub	132090 rub	132090 rub	132090 rub	ST-B with vyt.
	PR 86 A	01276 / P12	GP 2	Pfaff 591-726 cl	Pfaff 591-726 cl	Pfaff 591-726 cl	Pfaff 591-726 cl	Pfaff 591-726 cl	Pfaff 591-726 cl	ST-B with vyt.
	180 Kg	135 kg	120 Kg	130 Kg	130 Kg	130 Kg	130 Kg	130 Kg	130 Kg	ST-B with vyt.
	NEVE (Italy)	"Sweet" Czech	Colli (Italy)	Pfaff (Germany)	Pfaff (Germany)	Pfaff (Germany)	Pfaff (Germany)	Pfaff (Germany)	Pfaff (Germany)	ST-B with vyt.
	1250 * 900 * 1350	900 * 510 * 1380	900 * 500 * 850	900 * 500 * 850	900 * 500 * 850	900 * 500 * 850	900 * 500 * 850	900 * 500 * 850	900 * 500 * 850	ST-B with vyt.
	3.1 kW	0.175 kW	0.27	0.27	0.27	0.27	0.27	0.27	0.27	ST-B with vyt.
	150 pairs per hour	500 pairs / hour								ST-B with vyt.
	123500 rub	18000 rbl	190,000 rubles	79400 rbl	79400 rbl	79400 rbl	79400 rbl	79400 rbl	79400 rbl	ST-B with vyt.

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Glueing and gluing the assembly of the outer and inner parts of the top along the edge line	ST-B with vyt.																					
Stitching of the edge of the ankle boots with simultaneous trimming of the edges of the leather lining and attaching the elastic with the second line	GP 2	120 Kg	Colli (Italy)	900 * 500 * 850	0.27 kW																	
Cleaning ZVO	G12 / 1	100 Kg	GEL mini	760 * 855 * 1480	1.9 kW	120 pairs / hour		54,000 rubl														
Accounting for production and return by performer	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	KARO 1	80 Kg	Leibroek (Germany)	520 * 1100 * 1370	2.2 kW	150 pairs per hour		54,000 rubl						
Acquisition of ZVO in growth. assortment, bundling, accounting	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B
The amount of equipment costs	RUB 1,972,560						RUB 1,035,156						RUB 1,163,312									

Table 11. Characteristics of equipment for assembling shoes for autumn women's boots (model E)

the name of the operation	1 set of equipment for innovative technological process						2 set of equipment for innovative technological process						3 set of equipment for innovative technological process								
	vendor code	weight	manufacturer	dimensions	power	performance	price	vendor code	weight	manufacturer	dimensions	power	performance	price	vendor code	weight	manufacturer	dimensions	power	performance	price

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Removing pull braces and tex from insoles	ST-B	RT07	MV5700	PICK24SZ	K20IT	K 73STIK
	ST-B	80 Kg	1250 kg	1100 kg	900 kg	1350kg
	ST-B	IRON FOX (Italy)	IRON FOX (Italy)	"CERIM" Italy	Cerim (Italy)	Cerim (Italy)
	ST-B	450 * 330 * 1100	3050 * 1000 * 1450	1600 * 230 * 2100	1000 * 1230 * 2055	173 * 114 * 184
	ST-B	2.0 kW	27.9 kW	5.5kw	5.46kW	5.46kW
	ST-B	100 pairs per hour	300 pairs in 8 hours	200 pairs / h	200 steam per hour	350
	ST-B	RUB 63,000	142840 rub	RUB 1,851,000	RUB 1,200,000	RUB 1758120
	ST-B	F1	333E	640 TM	640 TT	SZH-9CD
	ST-B	80KG	1200 kg	900 kg	860 kg	1200 KG
	ST-B	Leibrock (Germany)	Schön (Germany)	Schön (Germany)	Scheen Germany	Leibrock (Germany)
	ST-B	450 * 330 * 1100	1400 * 2100 * 950	1200 * 800 * 1600	1200 * 800 * 2000	1700 * 1200 * 1750
	ST-B	6.0	13.0 kW	3.25 kW	3.25 kW	4.0 kW
	ST-B	600 pairs	250 pairs per hour	250 pairs / h	250 pairs per hour	160 pairs per hour
	ST-B	154740 rub	122840 rub	RUB 1,750,000	RUB 1,400,000	RUB 1,577,800
	ST-B	SR1006	180042 / P2	PICK24SZ	02212 / P1	K78SZ
	ST-B	90 Kg	1130 kg	1100 kg	850 kg	1250 kg
	ST-B	ELVI (Italy)	Sweet (Czech Republic)	"CERIM" Italy	Sweet (Czech Republic)	Sweet (Czech Republic)
	ST-B	580 * 608 * 1450	966 * 3070 *	1600 * 230 * 2100	640 * 715 * 1700	1100 * 1050 * 1700
	ST-B	0.18	15.0 kW	5.5kw	0.42	5.38 kW
	ST-B	65-113 pairs / hour	180 pairs per hour	200 pairs / h	180 pairs per hour	220 pairs per hour
	ST-B	155,000 rbl	142840 rub	RUB 1,851,000	RUB 1,200,000	RUB 1,586,800

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			Trimming excess draw-off edge, ruffle draw-in edge, dust removal				
755 PC	FR27 / 2M	02068 / P4	A200 / D	CF78N	228kg	Cosmopol (Italy)	
450 Kg	300 Kg	250 Kg	100 Kg				
Sigma (Italy)	GRANUCCI (Italy)	Sweet (Czech Republic)	GEL mini				
760 * 855 * 1480	700 * 700 * 1030	650 * 500 * 1250	760 * 855 * 1480	1480 * 1100 * 750			
1.5 kW	1.5kw	2.5 kW	1.9 kW	2.0 kW			
150 pairs per hour	250 pairs per hour	150 pairs per hour	120 pairs / hour	100 pairs per hour			
12,700,000 rubles	RUB 900 480	127900 rub	100000rub	428400 rub			
755 PC	133	02068 / P4	D510	RW2-G			
450 Kg	350 Kg	250 Kg	120 Kg	150 Kg			
Sigma (Italy)	Italy	Sweet (Czech Republic)	Stema (Italy).	Leibrock (Germany)			
760 * 855 * 1480	600 * 650 * 1380	650 * 500 * 1250	820 * 360 * 1215	700 * 700 * 1030			
1.5 kW	2.0 kW	2.5 kW	1.1 kW	3.5 kW			
150 pairs per hour	250 pairs per hour	150 pairs per hour	150 pairs per hour	150 pairs per hour			
RUB 1,270,000	130000rub	127900 rub	120,000 rbl	540,000 rubles			
755 PC	133	02068 / P4	A200 / D	R 254			
450 Kg	350 Kg	250 Kg	100 Kg	190 kg			
Sigma (Italy)	Italy	Sweet (Czech Republic)	GEL mini	Sweet (Czech Republic)			
760 * 855 * 1480	600 * 650 * 1380	650 * 500 * 1250	760 * 855 * 1480	990 * 1510 * 1510			
1.5 kW	2.0 kW	2.5 kW	1.9 kW	5.25 kW			
150 pairs per hour	250 pairs per hour	150 pairs per hour	120 pairs / hour	180 pairs per hour			
RUB 1,270,000	130000rub	127900 rub	100000rub	273,000 rbl			

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Bonding heel pads and insoles	ST-B	attachment PES-R	UVS80	LO2	G12 / 1	TR19	Cooling shoes after pressing
	ST-B	attachment PES-R	140 kg	205kg	100 Kg	300 Kg	
	ST-B	attachment PES-R	GRANUCCI (Italy)	Omsa (Italy)	GEL mini	Stema (Italy).	
	ST-B	attachment PES-R	700 * 600 * 1900	1130 * 800 * 500	760 * 855 * 1480	1500 * 1000 * 1760	
	ST-B	attachment PES-R	0.1 kW	1.5 kW	1.9 kW	2.0 kW	
	ST-B	attachment PES-R	100 pairs per hour	300 pairs per hour	120 pairs / hour	600 - 800 pairs / h	
	ST-B	attachment PES-R	RUB 238740	359520 rub	54,000 rbl	RUB 504,000	
	ST-B	attachment PES-R	123LHE	ASL-1	KARO 1	FR3200	
	ST-B	attachment PES-R	180 ru	80 Kg	80 Kg	400 Kg	
	ST-B	attachment PES-R	Schön (Germany)	Leibrock (Germany)	Leibrock (Germany)	IRON FOX (Italy)	
	ST-B	attachment PES-R	800 * 850 * 2100	420 * 330 * 1100	520 * 1100 * 1370	1500 * 1500 * 1760	
	ST-B	attachment PES-R	0.6 kW	1.3kw	2.2 kW	1.9 kW	
	ST-B	attachment PES-R	125	250 pairs per hour	150 pairs per hour	900-1000 pairs / h	
	ST-B	attachment PES-R	RUB 190,200	186,000 rbl	84790 rub	198,000 rbl	
	ST-B	attachment PES-R	04222 / P1	LP 1	SP75AR	TR 22	
	ST-B	attachment PES-R	135 kg	120 Kg	70 Kg	500 Kg	
	ST-B	attachment PES-R	Sweet (Czech Republic)	Stema (Italy).	"NEVE"	Stema (Italy).	
	ST-B	attachment PES-R	550 * 800 * 1475	820 * 360 * 1215	1100 * 900 * 1400	1100x2800x1760	
	ST-B	attachment PES-R	0.42 kW	1.1 kW	1.0 kW	2.0 kW	
	ST-B	attachment PES-R	150 pairs per hour	250 pairs per hour	120 pairs per hour	from 1000 to 2000 pairs / h	
	ST-B	attachment PES-R	185600 RUB	352800 rub	54,000 rbl	583 800 rub	

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Retouching the top of the shoe	G12 / 1	100 Kg	GEL mini	760 * 855 * 1480	1.9 kW	120 pairs / hour	54,000 rbl
Upper dressing	TL 75	155 kg	GRANUCCI (Italy)	1850 * 950 * 1000	2.0 kW	150 pairs / hour	98240 rub
Shoe marking	341 / BF	115 ru	IRON FOX (Italy)	750 * 600 * 1800	0.25	1500 pairs / 8h	RUB 40 320
Quality control	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B
Shoe packaging	ST-UO	ST-UO	ST-UO	ST-UO	ST-UO	ST-UO	ST-UO
Delivery of shoes to the warehouse, paperwork	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B
The amount of equipment costs	RUB 10,453,280			RUB 8,906,320			RUB 9,110,930

Table 12. Characteristics of the equipment for assembling the workpiece model G (men's boots)

the name of the operation	1 set of equipment for innovative technological process							2 set of equipment for innovative technological process							3 set of equipment for innovative technological process						
	vendor code	weight	manufacturer	dimensions	power	performance	price	vendor code	weight	manufacturer	dimensions	power	performance	price	vendor code	weight	manufacturer	dimensions	power	performance	price
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22

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Adjusting the sock to the vamp	Typical GC24680 130 Kg Typical (China) 900 * 500 * 850 0.27 kW 58212 rbl	ST-B with vyt. ST-B with vyt. ST-B with vyt. ST-B with vyt. ST-B with vyt. ST-B with vyt.	M107 \ R 180 Kg Sabal (Italy) 1430 * 780 * 950 2.1 kW 150 pairs per hour RUR 185640	RP67TE 180kg Sagita (Italy) 1100 * 550 * 1270 0.75 kW 60 pairs per hour 402 090 rub	Duplication of upper details with interlining	Lowering the edges of the outerbaby top and lining	Cutting into production	Receiving and checking the cut
Adjusting the sock to the vamp	Typical GC24026 130 Kg Typical (China) 900 * 500 * 850 0.27 kW 58212 rbl	ST-B with vyt. ST-B with vyt. ST-B with vyt. ST-B with vyt. ST-B with vyt. ST-B with vyt.	C 1100V 180 Kg Schön (Germany) 1800 * 130 * 950 0.8 kW 150 pairs per hour 123 150 rub	S1031C 170 kg Schön (Germany) 1050 * 550 * 1200 1.0 kW 60 pairs per hour 234500 rub	3SE-RZ 140KG Fortuna (Germany) 1050 * 540 * 1160 0.5 kW 77 pairs / h 15600 rbl	ST-B ST-B ST-B ST-B ST-B ST-B	ST-B ST-B ST-B ST-B ST-B ST-B	ST-B ST-B ST-B ST-B ST-B ST-B
Adjusting the sock to the vamp	Pfaff 574-900 cl 130 Kg "PFAFF" Germ 520 * 180 0.27 kW 79600 rub	ST-B with vyt. ST-B with vyt. ST-B with vyt. ST-B with vyt. ST-B with vyt. ST-B with vyt.	PR 86 A 180 Kg NEVE (Italy) 1250 * 900 * 1350 3.1 kW 150 pairs per hour 123500 rub	01280 / P1 186 kg Sweet (Czech Republic) 900 * 600 * 1280 0.5 kW 65 pairs per hour 320,700 rbl	01146 / P5 130 Kg Sweet (Czech Republic) 1050 * 540 * 1190 0.7 kW 63 pairs per hour 17800 rbl	ST-B ST-B ST-B ST-B ST-B ST-B	ST-B ST-B ST-B ST-B ST-B ST-B	ST-B ST-B ST-B ST-B ST-B ST-B

Impact Factor:

ISRA (India) = 6.317	SIS (USA) = 0.912	ICV (Poland) = 6.630
ISI (Dubai, UAE) = 1.582	ПИИИ (Russia) = 3.939	PIF (India) = 1.940
GIF (Australia) = 0.564	ESJI (KZ) = 9.035	IBI (India) = 4.260
JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

Glueing and stitching the vamp onto the tongue	Typical GC24680	130 Kg	Typical (China)	900 * 500 * 850	0.27 kW	58212 rbl	Typical GC24026	130 Kg	Typical (China)	900 * 500 * 850	0.27 kW	58212 rbl	Typical GC24026	130 Kg	Typical (China)	900 * 500 * 850	0.27 kW	58212 rbl	Typical GC24026	130 Kg	Typical (China)	900 * 500 * 850	0.27 kW	58212 rbl
Tucking darts on the back	Typical GC24680	130 Kg	Typical (China)	900 * 500 * 850	0.27 kW	58212 rbl	Typical GC24026	130 Kg	Typical (China)	900 * 500 * 850	0.27 kW	58212 rbl	Pfaff 574-900 cl	130 Kg	"PFAFF" Germany	520 * 180	0.27 kW	79600 rub	Pfaff 574-900 cl	130 Kg	"PFAFF" Germany	520 * 180	0.27 kW	79600 rub
Spreading with glue and stitching the back to the ankle boots	Typical GC24680	130 Kg	Typical (China)	900 * 500 * 850	0.27 kW	58212 rbl	Typical GC24026	130 Kg	Typical (China)	900 * 500 * 850	0.27 kW	58212 rbl	Pfaff 574-900 cl	130 Kg	"PFAFF" Germany	520 * 180	0.27 kW	79600 rub	Pfaff 574-900 cl	130 Kg	"PFAFF" Germany	520 * 180	0.27 kW	79600 rub
Adjusting the overhead protectors on the ankle boots	Typical GC24680	130 Kg	Typical (China)	900 * 500 * 850	0.27 kW	58212 rbl	Typical GC24026	130 Kg	Typical (China)	900 * 500 * 850	0.27 kW	58212 rbl	Pfaff 574-900 cl	130 Kg	"PFAFF" Germany	520 * 180	0.27 kW	79600 rub	Pfaff 574-900 cl	130 Kg	"PFAFF" Germany	520 * 180	0.27 kW	79600 rub
Glueing and gluing the vamp on the ankle boots	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.	ST-B with vyt.
Tightening the vamp on the ankle boots while attaching the tongue	Typical GC24680	130 Kg	Typical (China)	900 * 500 * 850	0.27 kW	58212 rbl	Typical GC24026	130 Kg	Typical (China)	900 * 500 * 850	0.27 kW	58212 rbl	Pfaff 574-900 cl	130 Kg	"PFAFF" Germany	520 * 180	0.27 kW	79600 rub	Pfaff 574-900 cl	130 Kg	"PFAFF" Germany	520 * 180	0.27 kW	79600 rub
Punching holes for lacing	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	

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Adjusting the leather pocket on the leather lining under the ankle boots	491 GRAMAC	130 Kg	Granucci (Italy)	520 * 180	1.76 kW	ST-B with vvt	ST-B with vvt	4180i-511 E5 BM00002	130 Kg	Durkopp Adler	900 * 500 * 850	0.27 kW	211 596 rub	4180i-511 E5 BM00002	130 Kg	Durkopp Adler	900 * 500 * 850	0.27 kW	211 596 rub	132090 rub	Pfaff 591-900 cl	130 Kg	Pfaff (Germany)	900 * 500 * 850	0.27	79400 rbl
Adjusting the leather lining under the ankle boots to the textile lining under the vamp;	491 GRAMAC	130 Kg	Granucci (Italy)	520 * 180	1.76 kW	ST-B with vvt	ST-B with vvt	4180i-511 E5 BM00002	130 Kg	Durkopp Adler	900 * 500 * 850	0.27 kW	211 596 rub	4180i-511 E5 BM00002	130 Kg	Durkopp Adler	900 * 500 * 850	0.27 kW	211 596 rub	132090 rub	Pfaff 591-900 cl	130 Kg	Pfaff (Germany)	900 * 500 * 850	0.27	79400 rbl
Spreading with glue the outer and inner nodes of the upper parts	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt	ST-B with vvt
Stitching the workpiece along the edge line with simultaneous trimming of the edges of the leather lining;	GP 2	120 Kg	Colli (Italy)	900 * 500 * 850	0.27 kW	120 pairs /	19,000 rbl	GP 2	120 Kg	Colli (Italy)	900 * 500 * 850	0.27	19,000 rbl	GP 2	120 Kg	Colli (Italy)	900 * 500 * 850	0.27	19,000 rbl	19,000 rbl	GP 2	120 Kg	Colli (Italy)	900 * 500 * 850	0.27	19,000 rbl
Shoe uppers cleaning	G12 / 1	100 Kg	GEL mini	760 * 855 * 1480	1.9 kW	120 pairs /	54,000 rbl	KARO 1	80 Kg	Leibrock	520 * 1100	2.2 kW	150 pairs	54,000 rbl	SP75AR	70 Kg	"NEVE" Italy	1100 * 900	1.0 kW	120 pairs	54,000 rbl	54,000 rbl	54,000 rbl	54,000 rbl	54,000 rbl	
Lacing the shoe upper	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	

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Quality control, procurement of blanks, delivery to the warehouse	ST-B	The amount of equipment costs	RUB 946 438	636552 rub	RUB 694,000
	ST-B				
	ST-B				
	ST-B				
	ST-B				
	ST-B				
	ST-B				
	ST-B				
	ST-B				
	ST-B				
	ST-B				
	ST-B				
	ST-B				
	ST-B				

Table 13. Characteristics of equipment for assembling shoes model G (men's boots)

the name of the operation	1 type of equipment							2 type of equipment							3 type of equipment						
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	vendor code	weight	manufacturer	dimensions	power	performance	price	vendor code	weight	manufacturer	dimensions	power	performance	price	vendor code	weight	manufacturer	dimensions	power	performance	price
Receiving and checking the cut	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B
Cutting into production	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B
Lowering the edges of the outer baby top and lining	SS 20	135 kg	Comels	1050 * 550 * 1030	1.2 kW	75 pairs per hour	15900 rbl	3SE-RZ	140KG	Fortuna (Germany)	1050 * 540 * 1160	0.5 kW	77 pairs / h	15600 rbl	01146 / P5	130 Kg	Sweet (Czech Republic)	1050 * 540 * 1190	0.7 kW	63 pairs per hour	17800 rbl
Bending with simultaneous application of hot melt adhesive.	RP67TE	180kg	Sagita (Italy)	1100 * 550 * 1270	0.75 kW	60 pairs per hour	402 090 rub	S1031C	170 kg	Schön (Germany)	1050 * 550 * 1200	1.0 kW	60 pairs per hour	234500 rub	01280 / P1	186 kg	Sweet (Czech Republic)	900 * 600 * 1280	0.5 kW	65 pairs per hour	320,700 rbl

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Glueing and gluing the vamp on the ankle boots	ST-B with vyt.	Typical GC24680	ST-B	Adjusting the leather pocket on the leather lining under the ankle boots	491 GRAMAC	491 GRAMAC	Adjusting the leather lining under the ankle boots to the textile lining under the vamp;	ST-B with vyt
Tightening the vamp on the ankle boots while attaching the tongue	ST-B with vyt.	130 Kg	ST-B	Adjusting the leather lining under the ankle boots	130 Kg	130 Kg	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Punchin g holes for lacing	ST-B	Typical (China)	ST-B	Adjusting the leather lining under the ankle boots	Granucci (Italy)	Granucci (Italy)	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Adjustin g the leather pocket on the leather lining under the ankle boots	ST-B	900 * 500 * 850	ST-B	Adjusting the leather lining under the ankle boots	520 * 180	520 * 180	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Tightening the vamp on the ankle boots while attaching the tongue	ST-B	0.27 kW	ST-B	Adjusting the leather lining under the ankle boots	1.76 kW	1.76 kW	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Punchin g holes for lacing	ST-B	-	ST-B	Adjusting the leather lining under the ankle boots	-	-	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Adjustin g the leather pocket on the leather lining under the ankle boots	ST-B	58212 rub	ST-B	Adjusting the leather lining under the ankle boots	211 596 rub	211 596 rub	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Tightening the vamp on the ankle boots while attaching the tongue	ST-B	Typical GC24026	ST-B	Adjusting the leather lining under the ankle boots	4180i-511 E5 BM00002	4180i-511 E5 BM00002	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Punchin g holes for lacing	ST-B	130 Kg	ST-B	Adjusting the leather lining under the ankle boots	130 Kg	130 Kg	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Adjustin g the leather pocket on the leather lining under the ankle boots	ST-B	Typical (China)	ST-B	Adjusting the leather lining under the ankle boots	Durkopp Adler	Durkopp Adler	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Tightening the vamp on the ankle boots while attaching the tongue	ST-B	900 * 500 * 850	ST-B	Adjusting the leather lining under the ankle boots	900 * 500 * 850	900 * 500 * 850	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Punchin g holes for lacing	ST-B	0.27 kW	ST-B	Adjusting the leather lining under the ankle boots	0.27 kW	0.27 kW	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Adjustin g the leather pocket on the leather lining under the ankle boots	ST-B	-	ST-B	Adjusting the leather lining under the ankle boots	-	-	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Tightening the vamp on the ankle boots while attaching the tongue	ST-B	58212 rub	ST-B	Adjusting the leather lining under the ankle boots	132090 rub	132090 rub	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Punchin g holes for lacing	ST-B	Pfaff 574-900 cl	ST-B	Adjusting the leather lining under the ankle boots	Pfaff 591-900 cl	Pfaff 591-900 cl	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Adjustin g the leather pocket on the leather lining under the ankle boots	ST-B	130 Kg	ST-B	Adjusting the leather lining under the ankle boots	130 Kg	130 Kg	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Tightening the vamp on the ankle boots while attaching the tongue	ST-B	"PFaff"Germany	ST-B	Adjusting the leather lining under the ankle boots	Pfaff (Germany)	Pfaff (Germany)	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Punchin g holes for lacing	ST-B	520 * 180	ST-B	Adjusting the leather lining under the ankle boots	900 * 500 * 850	900 * 500 * 850	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Adjustin g the leather pocket on the leather lining under the ankle boots	ST-B	0.27 kW	ST-B	Adjusting the leather lining under the ankle boots	0.27	0.27	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Tightening the vamp on the ankle boots while attaching the tongue	ST-B	-	ST-B	Adjusting the leather lining under the ankle boots	-	-	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt
Punchin g holes for lacing	ST-B	79600 rub	ST-B	Adjusting the leather lining under the ankle boots	79400 rub	79400 rub	Spreadin g with glue gluing the outer and inner nodes of the upper parts	ST-B with vyt

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JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

Stitching the workpiece along the edge line with simultaneous trimming of the edges of the leather lining;	GP 2	120 Kg	Colli (Italy)	900 * 500 * 850	0.27 kW	-	19,000 rbl	GP 2	120 Kg	Colli (Italy)	900 * 500 * 850	0.27	-	19,000 rbl							
Shoe uppers cleaning	G12 / 1	100 Kg	GEL mini	760 * 855 * 1480	1.9 kW	120 pairs / hour	54,000 rbl	KARO 1	80 Kg	Leibrock (Germany)	520 * 1100 * 1370	2.2 kW	150 pairs per hour	54,000 rbl							
Lacing the shoe upper	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B							
Quality control, procurement of blanks, delivery to the warehouse	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B	ST-B							
The amount of equipment costs	RUB 946 438							636552 rub							RUB 694,000						

Table 14. Consolidated innovative technological process for the assembly of the top of the assortment range for men's shoes

Operations	Model 1 winter	Model 2 winter	Model 3 winter	Model 4 spring	Model 5 spring	Model 6 spring	Model 7 years	Model 8 years	Model 9 years	Model 10 autumn	Model 11 autumn	Model 12 autumn
1	2	3	4	5	6	7	8	9	10	11	12	13
1. Receiving and checking the cut	+	+	+	+	+	+	+	+	+	+	+	+
2. Starting the cut into production	+	+	+	+	+	+	+	+	+	+	+	+

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 ESJI (KZ) = 9.035
 SJIF (Morocco) = 7.184

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 IBI (India) = 4.260
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3. Descending the edges of the top parts	+	+	+	+	+	+	+	+	+	+	+	+
4. Bending the edges of the outer parts of the top	+	+	+	+	+	+	+	+	+	+	+	+
5. Duplication of upper details with interlining, vamp - with thermoplastic toe cap	+	+	+	+	+	+	*	+	*	+	+	+
6. Tightening the dart on the back	*	*	*	+	+	*	*	*	*	+	*	+
7. Spreading with glue and gluing the back of the boot	*	*	+	+	+	*	*	*	*	+	+	*
8. Adjusting the backs of the ankle boots	*	*	+	+	+	*	*	*	*	+	+	*
9. Adjusting the leather pocket on the leather lining under the ankle boots	+	*	+	+	+	+	*	+	*	+	+	+
10. Spreading with glue and gluing the boot knot and the boot lining knot along the edge	+	*	+	+	+	*	*	*	*	*	*	+
11. Stitching of ankle boots with trimming of leather lining	+	*	+	+	+	*	*	*	*	*	*	+
12. Punching holes for laces	+	*	+	+	+	*	+	+	*	+	*	+
13. Spreading with glue and gluing the sock to the vamp	*	*	*	+	+	*	*	*	*	+	*	*
14 attaching the toe to the vamp	*	*	*	+	+	*	*	*	*	+	*	*
15. Adding leather tongue lining to textile vamp lining	+	*	+	+	+	*	*	+	*	+	*	+
16. Glueing and gluing the vamp lining knot and the vamp knot along the edge	+	*	+	+	+	*	*	*	*	*	*	+

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17. Stitching the edging of the vamp tongue while trimming the edges of the leather lining.	+	*	+	+	+	*	*	*	*	*	+	+
18. Spreading with glue and gluing the back group to the front	+	*	+	+	+	*	*	*	*	*	*	+
19. Tailoring the back group to the front group while sewing the thread bartack	+	*	+	+	+	*	*	*	*	*	*	+
20. Spreading with glue and sticking the tabs on the vamp	+	*	+	*	*	*	+	+	*	+	*	*
21. Tying the reeds onto the vamp	+	*	+	*	*	*	+	+	*	+	*	*
22. attaching the overhead blocks to the ankle boots	+	*	+	*	*	*	*	+	*	+	+	*
23. Spreading with glue and gluing the vamp on the ankle boots	*	*	*	*	*	+	+	+	*	+	*	*
24. Attaching the vamp to the ankle boots while attaching the tongue (without tongue)	*	*	*	*	*	+	+	+	*	+	+	*
25. Adding a leather lining under the ankle boots to a textile lining under the vamp	*	*	*	*	*	+	*	+	*	+	*	*
26. Spreading with glue and gluing the outer and inner nodes of the upper parts	*	+	*	*	*	+	*	+	*	+	*	*
27. Stitching the workpiece along the edge line with simultaneous trimming of the edges of the leather lining	*	*	+		*	+	+	+	*	+	+	*

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28. Spreading with glue and gluing the leather lining on the vamp parts	*	*	*	*	*	*	*	*	+	*	*	*
29. Tightening the leather lining with the upper	*	*	*	*	*	*	*	*	+	*	*	*
30. Stitching the details of the ankle boots on the ankle boots	*	*	*	*	*	*	*	*	*	*	+	*
31. Glueing the harness belt, putting on the buckles, gluing the ends of the belt	*	*	*	*	*	*	*	*	*	*	+	*
32. Spreading the belt with glue, gluing the Velcro fastener	*	*	*	*	*	*	*	*	*	*	+	*
33. Attaching the leather lining under the harness belt to the harness belt	*	*	*	*	*	*	*	*	*	*	+	*
34. Attaching leather lining under the belt to the belt	*	*	*	*	*	*	*	*	*	*	+	*
35. Adjusting the harness belts on the back	*	*	*	*	*	*	*	*	*	*	+	*
36. Adjusting the belt on the back	*	*	*	*	*	*	*	*	*	*	+	*
37. Tightening the back edges of the ankle boots	*	+	+	*	*	+	+	+	*	*	+	*
38. Adjustment of ZNR	*	+	*	*	*	*	*	+	*	*	+	*
39. Adjusting the leather podklochnikov on the textile lining of the vamp	*	*	*	*	*	*	*	*	*	*	+	*
40. Adjusting the shtafers on the lining	+	*	+	*	*	*	*	*	*	*	+	*
41. Spreading glue on the upper and front edges of the ankle	+	*	*	*	*	*	*	*	*	*	+	*

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JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

boots and lining, drying												
42. Seam ankle boots with a lining under the inverted seam	+	*	*	*	*	*	*	*	*	*	+	*
43. Spreading with glue and gluing a pad of a soft edge, drying	*	*	*	*	*	*	*	*	*	*	+	*
44. Turning and banding the edge of the ankle boots	*	*	*	*	*	*	*	*	*	*	+	*
45. Finishing the soft edging of the ankle boots	*	*	*	*	*	*	*	*	*	*	+	*
46. Tightening of the ankle boots along the front edge	*	*	*	*	*	*	*	*	*	*	+	*
47. Spreading gum and gum parts with glue. Drying	*	+	*	*	*	*	*	*	*	*	*	*
48. Gluing parts of a rubber band to an elastic band	*	+	*	*	*	*	*	*	*	*	*	*
49. Attaching the details of the elastic to the elastic	*	+	*	*	*	*	*	*	*	*	*	*
50. Gluing the outer boot on the elastic butt to the elastic part	*	+	*	*	*	*	*	*	*	*	*	*
51. Gluing the vamp part to the elastic but butt to the elastic part	*	+	*	*	*	*	*	*	*	*	*	*
52. Tailoring the tibia detail to the knot of the outer tibia with one stitch + trimming with openwork on both sides of the stitching	*	+	*	*	*	*	*	*	*	*	*	*
53 Sewing the workpiece onto the zipper with double stitching	*	+	*	*	*	*	*	*	*	*	*	*
54. Tailoring the inner top to the	*	+	*	*	*	*	*	*	*	*	*	*

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zipper with the first line												
55. Tailoring the inner top to the zipper with the first line	*	+	*	*	*	*	*	*	*	*	*	*
56. Tailoring the vamp on the knot of the ankle boots with a double stitching + one openwork inside	*	+	*	*	*	*	*	*	*	*	*	*
57. Bend of the upper edge of the vamp detail	*	+	*	*	*	*	*	*	*	*	*	*
58. Inversion, lining of a soft edging of ankle boots, a valve under a zipper	*	+	*	*	*	*	*	*	*	*	*	*
59. Tailoring the inner top to the zipper with the second line	*	+	*	*	*	*	*	*	*	*	*	*
60. Trimming soft edging, elastic and edging vamp details	*	+	*	*	*	*	*	*	*	*	*	*
61. Adjusting the knot of the lining under the vamp on the resulting group	*	+	*	*	*	*	*	*	*	*	*	*
62. Stitching decorative lines	*	*	+	*	*	*	*	*	*	*	*	*
63. Tucking of the lining along the back edge with a stitching seam	*	*	+	*	*	+	*	*	*	*	*	*
64. Tailoring the leather pocket on the ankle boots	*	*	*	*	*	*	+	*	*	*	*	*
65. Attaching the elastic to the vamp with the 1st stitch	*	*	*	*	*	+	*	*	*	*	*	*
66. Trimming Thread	+	+	+	+	+	+	+	+	+	+	+	+

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67. Shoe uppers cleaning	+	+	+	+	+	+	+	+	+	+	+	+
68. Lacing blanks	+	*	+	+	+	+	+	+	*	+	*	+

Table 15. Consolidated innovative technological process for assembling footwear for the assortment of men's footwear

Operations	Model 1 winter	Model 2winter	Model 3winter	Model 4spring	Model 5spring	Model 6spring	Model 7years	Model 8years	Model 9years	Model 10autumn	Model 11 autumn	Model 12autumn
1	2	3	4	5	6	7	8	9	10	11	12	13
1.Receiving blanks	+	+	+	+	+	+	+	+	+	+	+	+
2.Starting workpieces	+	+	+	+	+	+	+	+	+	+	+	+
3.Moisturizing the workpiece	+	+	+	+	+	+	+	+	+	+	+	+
4. Selection and cleaning of pads	+	+	+	+	+	+	+	+	+	+	+	+
5.Attaching the insoles (insole knots)	+	+	+	+	+	+	+	+	+	+	+	+
6.Smearing pads with talcum powder	+	+	+	+	+	+	+	+	+	+	+	+
7.Inserting backdrops made of thermoplastic materials	+	+	+	+	+	+	+	+	*	+	+	+
8.Pre-forming the heel of the blanks	+	+	+	+	+	+	+	+	*	+	+	+
9. Putting on the shoe upper on the last and installing the heel part	+	+	+	+	+	+	+	+	*	+	+	+
10. Tightening and tightening of the nose-beam part of the ZVO with hot melt glue with preliminary moistening of the nose-beam part and activation of the toe cap	+	+	+	+	+	+	+	+	*	+	+	+
11.Adhesive tightening of the	+	+	+	+	+	+	+	+	*	+	+	+

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heel part with simultaneous tightening of the heel part by tex												
12.Wet-heat treatment of shoes	+	+	+	+	+	+	+	+	+	+	+	+
13. Removing staples or tex from insoles	+	+	+	+	+	+	+	+	+	+	+	+
14.Trimming off excess traction edge	+	+	+	+	+	+	+	+	*	+	+	+
15.Rouging of the pulling edge, dust removal	+	+	+	+	+	+	+	+	*	+	+	+
16.First glueing of the tightening edge, drying	+	+	+	+	+	+	+	+	+	+	+	+
17.Second glueing of the tightening edge, drying	+	+	+	+	+	+	+	+	+	+	+	+
18 matching shoe soles	+	+	+	+	+	+	+	+	+	+	+	+
19.Treatment of the low-running surface of the soles with a solvent	+	+	+	+	+	+	+	+	+	+	+	+
20.First and second spreading glue on the slow surface of the soles, drying	+	+	+	+	+	+	+	+	+	+	+	+
21.Activation of adhesive films and gluing of soles	+	+	+	+	+	+	+	+	+	+	+	+
22.Cleaning the top and bottom of shoes	+	+	+	+	+	+	+	+	+	+	+	+
23. Removing shoes from the last	+	+	+	+	+	+	+	+	+	+	+	+
24. checking and cleaning the nails inside the shoes	+	+	+	+	+	+	+	+	+	+	+	+
25. Bonding of heels and insoles	+	+	+	+	+	+	+	+	*	+	+	+
26.Cleaning and repairing shoe defects	+	+	+	+	+	+	+	+	+	+	+	+
27 retouching the upper of the shoe	+	+	+	+	+	+	+	+	*	+	+	+
28. Dressing the upper of the shoe	+	+	+	+	+	+	+	+	+	+	+	+

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29.Smoothing out wrinkles on shoes	+	+	+	+	+	+	+	+	+	+	+	+	+
30 shoe markings	+	+	+	+	+	+	+	+	+	+	+	+	+
31. Packing shoes	+	+	+	+	+	+	+	+	+	+	+	+	+

Table 16. Consolidated innovative technological process for the assembly of the upper blank for the assortment of women's shoes

No	Operations	Model A1	Model B2	Model AT 3	Model G4	Model D5	Model E6	Model F7	Model Z8	Model I9	Model K10	Model L11	Model M12
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Receiving and checking the cut	+	+	+	+	+	+	+	+	+	+	+	+
2	Cutting into production	+	+	+	+	+	+	+	+	+	+	+	+
3	Aligning the top parts to thickness	+	+	+	+	+	+	+	+	+	+	+	+
4	Lowering the edges of the upper parts	+	+	+	+	+	+	+	+	+	+	+	+
5	Duplication of outer upper with midsole and vamp	+	+	+	+	+	+	+	*	*	+	+	+
6	Inserting metal fittings into a decorative belt detail	+	*	*	*	*	*	*	*	*	*	*	*
7	Bending the edges of parts	+	+	+	+	+	+	+	+	+	+	+	+
8	Sewing decorative stitching on the shaft	+	*	*	*	*	*	*	*	*	*	*	*
9	Perforation of the upper part of the outer shaft	+	*	*	*	*	*	*	*	*	*	*	*
10	Adjusting the backs on ankle boot and bootleg rear internal double row stitching	+	+	*	*	*	*	*	*	*	*	*	*
11	Tightening the front shaft with	+	*	*	*	*	*	*	*	*	*	*	*

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	the rear outer shaft												
12	Glue the zipper tape and inner boot along the joint line. Drying	+	+	+	*	*	*	*	*	*	*	*	*
13	Bonding the edges of the inner zipped boot	+	+	+	*	*	*	*	*	*	*	*	*
14	Attaching the zipper with the 1st stitching	+	+	+	*	*	*	*	*	*	+	+	+
17	Re-hemming of the upper edge of the bootleg	+	+	+	*	*	*	*	*	*	*	*	*
18	Glue the vamp and bootleg for gathering. Drying	+	+	+	*	*	*	*	*	*	*	*	*
19	Applying the vamp to the bootleg	+	+	+	*	*	*	*	*	*	*	*	*
20	Tightening the vamp on the bootleg double-row stitching	+	+	+	*	*	*	*	*	*	*	*	*
21	Adjusting the shaft detail to the shaft	+	+	+	*	*	*	*	*	*	*	*	*
22	Adjusting the leather pocket on the fur lining	+	+	+	*	*	*	*	*	*	*	*	*
23	Adjusting the shafts to inner and outer fur lining	+	+	+	*	*	*	*	*	*	*	*	*
24	Tapering of the fur lining at the back edge with a stitching seam	+	+	+	*	*	*	*	*	*	*	*	*
25	Smoothing the seam	+	+	+	*	*	*	*	*	*	*	*	*

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26	Flap location under zipper on fur lining	+	+	+	*	*	*	*	*	*	*	*	*
27	Adjusting the flap under the zipper on the fur lining	+	+	+	*	*	*	*	*	*	*	*	*
28	Glue the outer knot details of the top and the knot of details of the fur lining along the line of the zipper for assembly. Drying	+	+	+	*	*	*	*	*	*	*	*	*
29	Bonding knot outside details of the top and knot of details of the fur lining along the line of the zipper	+	+	+	*	*	*	*	*	*	*	*	*
30	Attachment of the zipper with the 2nd line	+	+	+	*	*	*	*	*	*	+	+	+
31	Cutting the flap under the clasp lightning	+	+	+	*	*	*	*	*	*	+	+	+
32	Tightening of the bootlegs with backs along the back edge with a stitching seam	+	+	*	*	*	*	*	*	*	*	-	-
33	Seam smoothing and gluing webbing	+	+	+	*	*	*	*	*	*	+	+	+
34	Re-hemming of the upper edge of the bootleg	+	+	+	*	*	*	*	*	*	*	*	*
35	Tightening of the fur lining along the front	+	+	+	*	*	*	*	*	*	*	*	*

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	edge with a stitching seam												
36	Smoothing the seam	+	+	+	*	*	*	*	*	*	*	*	*
37	Turning out the ZVO	+	+	+	*	*	*	*	*	*	+	+	+
38	Glue the outer knot details of the top and the knot of details of the fur lining along the edge line. Drying	+	+	+	*	*	*	*	*	*	*	*	*
39	Bonding of the outer upper parts assembly and the fur lining parts assembly	+	+	+	*	*	*	*	*	*	*	*	*
40	Tightening the knot of the outer parts of the top and the knot of the fur lining parts along the edging line while trimming the excess	+	+	+	*	*	*	*	*	*	*	*	*
41	Pulling, securing and trimming the ends of the threads	+	+	+	+	+	+	+	+	+	+	+	+
42	Zipper opening	+	+	+	*	*	*	*	*	*	+	+	+
43	Trimming fur on a pulling edge	+	+	+	*	*	*	*	*	*	*	-	-
44	Glue the layers of the insole for assembly. Drying	+	+	+	+	+	+	+	+	+	+	+	+
45	Bonding of insole layers	+	+	+	+	+	+	+	+	+	+	+	+
46	Trimming the insole	+	+	+	+	+	+	+	+	+	+	+	+
47	Cleaning ZVO	+	+	+	+	+	+	+	+	+	+	+	+

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48	Quality control	+	+	+	+	+	+	+	+	+	+	+	+
49	Picking up blanks	+	+	+	+	+	+	+	+	+	+	+	+
50	Adjusting the sock to the vamp	*	*	*	*	*	+	*	*	*	*	*	*
51	Attaching the vamp to the front shoulder	*	*	*	*	*	*	*	*	*	+	+	+
52	Adjusting the backs to the front and back inner sides	*	*	*	*	*	*	*	*	*	*	+	+
53	Tightening of the front tibia with the rear outer tibia	*	*	*	*	*	*	*	*	*	*	+	+
54	Glue the zipper tape and inner boot along the line of their connection. Drying	*	*	*	*	*	*	*	*	*	+	+	+
55	Gluing the edges of the inner ankle boots with a zipper	*	*	*	*	*	*	*	*	*	+	+	+
56	Tapering of the back edges of the ankle boots with a stitch seam	*	*	*	*	*	*	*	*	*	+	+	+
57	Bending of the upper edge of the ankle boots	*	*	*	*	*	*	*	*	*	+	+	+
58	Adjusting the back of the inner to the vamp	*	*	*	+	+	+	*	*	*	*	*	*
59	Adjusting the back to the ankle boots	*	*	*	*	*	+	*	*	*	*	*	*
60	Attaching the leather pocket to the leather lining	*	*	*	*	*	-	+	+	+	+	+	+
61	Adjusting staples on	*	*	*	*	*	*	*	*	*	+	+	+

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	the inner and outer lining												
62	Tucking of the lining at the back edge with a stitching seam	*	*	*	*	*	*	*	*	*	+	+	+
63	Fitting through the lifting straps onto the leather lining	*	*	*	*	*	*	+	*	+	*	*	*
64	Stitching through the lifting straps to the back	*	*	*	*	*	*	+	*	+	*	*	*
65	Tightening vamp with leather lining	*	*	*	*	*	*	+	+	+	*	*	*
66	Glue the assembly of the outer parts of the top and the assembly of the lining along the edge, through the lifting strap under the assembly.	*	*	*	*	*	*	+	*	+	*	*	*
67	Bonding of the outer outer parts of the upper assembly with the lining assembly while bonding through the lifting strap	*	*	*	*	*	*	+	*	+	*	*	*
68	Tapering the trailing edges of the outer upper	*	*	*	+	+	+	*	*	*	*	*	*
69	Smoothing the seam and gluing the seam with adhesive tape	*	*	*	+	+	+	*	*	*	+	+	+
70	Flap location under the	*	*	*	*	*	*	*	*	*	+	+	+

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	zipper on the lining												
71	Tightening ankle boots with backs along the back edge with a stitching seam	*	*	*	*	*	*	*	*	*	*	+	+
72	Adjusting one-sided side bartack internal	*	*	*	+	+	+	*	*	*	*	*	*
73	Folding the top edge of the knot outer parts of the top	*	*	*	+	+	+	*	*	*	*	*	*
74	Bending of the upper edge of the ankle boots	*	*	*	*	*	*	*	*	*	+	+	+
75	Tucking of the lining along the front edge with a stitching seam	*	*	*	*	*	*	*	*	*	+	+	+
76	Adjusting the leather pocket on leather vamp lining	*	*	*	+	+	+	*	*	*	*	*	*
77	Tightening the leading edges leather lining	*	*	*	+	+	+	*	*	*	*	*	*
78	Tightening the knot of the outer parts of the top and the knot of the leather lining parts along the edge line while trimming the excess material	*	*	*	+	+	+	*	*	*	+	+	+
79	Stitching the edge of the workpiece with simultaneous trimming	*	*	*	*	*	*	+	+	+	*	*	*

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	of the edges of the leather lining												
80	Finishing of the workpiece in the toe-tuft part along the lingering edge	+	+	+	+	+	+	+	+	+	+	+	+

Table 17. Consolidated innovative technological process for assembling footwear in the assortment of women's shoes

No	Operations	Model A1	Model B2	Model AT 3	Model G4	Model D5	Model E6	Model F7	Model Z8	Model I9	Model K10	Model L11	Model M12
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Receiving blanks	+	+	+	+	+	+	+	+	+	+	+	+
2	Pads selection and cleaning	+	+	+	+	+	+	+	+	+	+	+	+
3	Attaching the insoles	+	+	+	+	+	+	+	+	+	+	+	+
4	Spreading talcum powder	+	+	+	+	+	+	+	+	+	+	+	+
5	Inserting backdrops made of thermoplastic materials	+	+	+	+	+	+	+	+	+	+	+	+
6	Pre-molding of the heel of the blanks	+	+	+	+	+	+	+	+	+	+	+	+
7	Putting on the shoe upper blank on the last and installing the heel part	+	+	+	+	+	+	+	+	+	+	+	+
8	Covering and tightening of the nose-beam part of the ZVO with hot melt glue with	+	+	+	+	+	+	+	*	*	+	+	+

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	preliminary moistening of the nose-beam part and activation of the toe cap												
9	Tightening the gel part of the ZVO	+	+	+	+	+	+	*	*	*	+	+	+
10	Tightening the heel of the workpieces	+	+	+	+	+	+	+	+	+	+	+	+
11	Wet-heat treatment of shoes	+	+	+	+	+	+	+	+	+	+	+	+
12	Hot air smoothing of creases on shoes	+	+	+	+	+	+	+	+	+	+	+	+
13	Removing lingering tex	+	+	+	+	+	+	+	+	+	+	+	+
14	Removing staples from insoles	+	+	+	+	+	+	+	+	+	+	+	+
15	Trimming excess traction edge	+	+	+	+	+	+	+	+	+	+	+	+
16	Ruffling the pulling edge, removing dust	+	+	+	+	+	+	+	+	+	+	+	+
17	Forgiveness of the footprint	*	+	+	+	+	+	+	+	+	+	+	+
18	First glue on the lingering edge and low-running surface of the sole, drying	+	+	+	+	+	+	+	+	+	+	+	+
19	The second spreading of glue on the lingering edge and the slow surface of	+	+	+	+	+	+	+	+	+	+	+	+

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	the sole, drying												
20	Flushing the slow surface of the soles	*	*	*	+	*	*	*	+	+	*	*	*
21	Activation of adhesive films and gluing of soles	+	+	+	+	+	+	+	+	+	+	+	+
22	Pre-attaching heels	*	*	*	+	*	*	*	+	+	*	*	*
23	Attaching heels	*	*	*	+	*	*	*	+	+	*	*	*
24	Sanding the edge of the sole	*	*	*	+	*	*	*	+	+	*	*	*
25	Application of varnish on the edge of leather soles and heels. Drying	*	*	*	+	*	*	*	+	+	*	*	*
26	Attaching high heels from the inside	*	*	*	+	*	*	*	+	+	*	*	*
27	Cleaning the top and bottom of shoes	+	+	+	+	+	+	+	+	+	+	+	+
28	Removing shoes from the last	+	+	+	+	+	+	+	+	+	+	+	+
29	Smoothing out wrinkles on shoes	*	*	*	+	*	*	*	+	+	*	*	*
30	Checking and cleaning nails inside shoes	+	+	+	+	+	+	+	+	+	+	+	+
31	Bonding heel pads and insoles	+	+	+	+	+	+	+	+	+	+	+	+
32	Retouching the top of the shoe	+	+	+	+	+	+	+	+	+	+	+	+
33	Upper dressing	+	+	+	+	+	+	+	+	+	+	+	+
34	Fastening finished shoes	+	+	+	*	*	*	+	*	+	+	+	+

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35	Shoe packaging	+	+	+	+	+	+	+	+	+	+	+	+
36	Delivery of shoes to the warehouse, paperwork	+	+	+	+	+	+	+	+	+	+	+	+

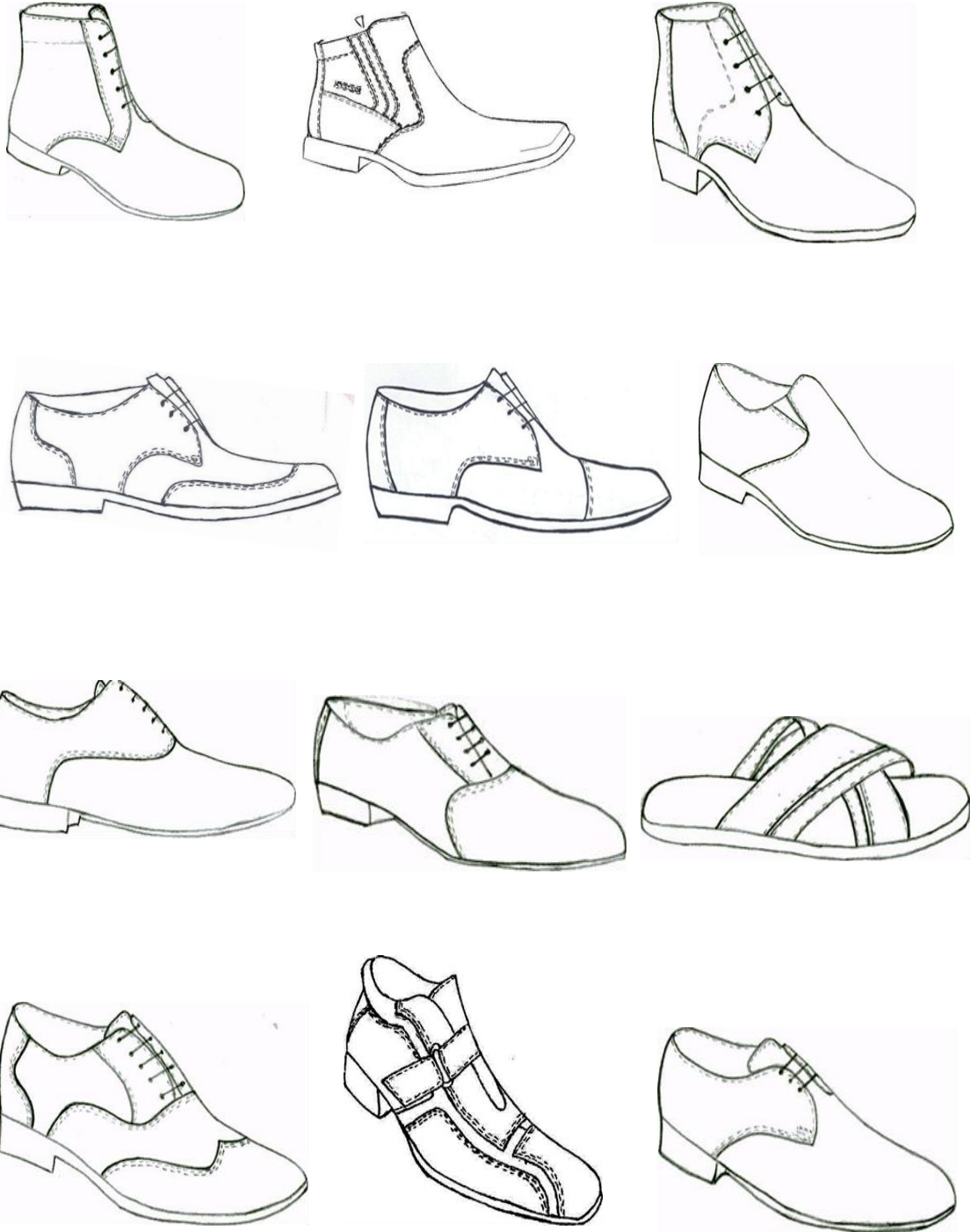


Figure 5 - Assortment of men's shoes

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Model A1



Model B 2



Model B3



Model G4



Model D5



Model E6



Model F7



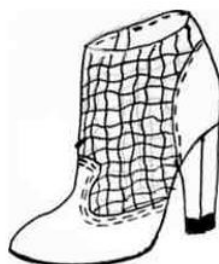
Model Z8



Model I9



Model C 10



Model L11



Model M12

Figure 6 - Assortment of women's shoes

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To assess the effectiveness of the production activity of a shoe company, it is necessary to analyze the annual results of the operation of the enterprise for the production of men's and women's assortment of shoes.

These calculations indicate that with 100% of sales of men's and women's shoes in the specified period of time, not only the costs of production and sales of products are covered, but also a profit of 3,697.4 thousand rubles remains. This testifies to the effective operation of the enterprise, as well as to the correct marketing and assortment policy. The product profitability is 14.9%.

Table 17 presents the annual results of the shoe enterprise for the production of men's and women's shoe assortment.

Most often, the company sells shoes through stores with payment after the sale, concluding contracts with the trade, indicating the timing of the receipt of funds on the manufacturer's accounts.

In this case, if footwear is in demand and is fully sold, then the company receives money on time, which is also needed to pay wages, purchase working capital and other expenses to ensure the development of production.

During the year, the company produces 327,903 pairs of shoes. With 100% sales of these products, the enterprise will receive proceeds in the amount of 392,202.1 thousand rubles. However, this is not always the case.

For example, when selling autumn shoes in the amount of 80% of the production volume, the profit is reduced by 43.15% and amounts to only 1,178 thousand rubles, while the sale of footwear less than 47.4% of the production volume brings losses to the company. Due to the lack of funds, it is necessary to reduce the volume of production, to delay the payment of wages to workers, for which at present the managers of the enterprise can be held accountable, even criminal. If such a situation arises, it is necessary to attract borrowed funds to cover costs and organize the subsequent production of products, which at the moment is associated with certain difficulties: interest on a loan has been significantly increased (up to 18%), loan repayment terms have been reduced, etc., leading to an even greater increase production costs.

Shoe enterprises should focus both on external (consumer enterprises, competition, market conditions, etc.) and on internal factors such as sales volume, profitability, coverage of basic costs, etc. However, it is impossible to take into account and foresee all situations that may arise when selling shoes, i.e. some shoe models are no longer in demand at a certain stage. In this case, another, usually not advertised side of marketing should appear: if the shoes, even without taking into account the requirements of the market, have already been produced, then they must be sold. For this purpose, in order to respond to the lower prices of competitors, it

is necessary to reduce too large stocks, get rid of damaged, defective shoes, eliminate leftovers, attract a large number of consumers, stimulate shoe consumption, using discounts for this. There are about twenty types of discounts, but for shoes the most common are those types of discounts that are used at various levels of the enterprise, sales organizations, trade. In addition to using discounts, an enterprise can initiate price reductions in case of underutilization of production capacities, a reduction in market share under the pressure of competition from competing enterprises, etc. In this case, the enterprise takes care of its costs, developing measures to reduce them by improving equipment and technology, introducing new types of materials into production, and constantly improving the quality of products. And all this requires large financial costs from enterprises, but, nevertheless, helps to increase the competitiveness of certain types of leather goods and the enterprise as a whole. In addition, the greater the amount of footwear produced, the more production costs decrease, which leads to a decrease in prices, and most importantly, creates such conditions for the functioning of the market that would not allow other competing enterprises to enter it and would cause a positive reaction from consumers. ...

The developed software allows the head of the enterprise not only to track the flow of funds on a daily basis, but what is especially important, to predict the replacement of one model, the demand for which has dropped to a critical volume, when funds to cover production costs associated with this model are not provided, and the transition to production of a new model, the demand for which, based on the analysis of the marketing service, seems to guarantee its viability and demand in a volume sufficient not only to cover the costs of its production, but also to obtain the necessary profit to ensure production itself without provoking bankruptcy.

Of course, it is good when there is already the necessary supply of this very demand for a new model, namely:

— contracts with consumers for delivery with prepayment;

— a guarantee of branded stores that during the trial sale of the model aroused demand and there is their demand within the limits of those volumes at which a return of funds spent on their launch will be provided, and a profit will be ensured, which will ensure the enterprise obtain high TEP and stability in the formation and provision consumer of competitive and demanded products.

Conclusion

Thus, taking into account the software for tracking the movement of cash flow and the presence of a well-functioning marketing service that is able to provide the very process of regulating the demand for the company's products, it is always possible to make

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the right decision to replace one model with another, while creating the basis for obtaining high TEP and preventing the workforce from bankruptcy.

Of course, all this is just a desire, in reality, such work should be carried out daily. To do this, it is necessary to reconsider our attitude to the so-called break-even point, which, as it were, forms the conditions for the implementation of all our conclusions on the formation of competitive industries, providing labor collectives with high TEP and creating the basis for preventing their bankruptcy.

The traditional option of constructing a break-even point provides an understanding that the volume of output of a given model cannot be less than a certain number of pairs of a given model.

But with a lot of assortment production, the number of pairs produced is formed by its demand, and if the demand does not ensure its implementation in the volume that provides the enterprise with a return of all funds spent on this model, in this case the manager must decide whether it is advisable to launch it into production. Therefore, we consider it justified when building a break-even point to indicate not only the volume of production of a given model, which would guarantee the return of all costs for this model, but also how long it is necessary to replace it with a new one, so that the return of these funds is provided in full and with the receipt arrived.

Table 17. Annual results of the shoe enterprise for the production of men's and women's shoes

Indicators	Jan.	Feb	March	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Sales volume, pairs	26114	26114	29661	29661	29661	28168	28168	28168	25358	25358	25358	26114
Sales proceeds, thousand rubles	45032.84	45032.84	31026.82	31026.82	31026.82	24033.9	24033.9	24033.9	30640.47	30640.47	30640.47	45032.84
Unit cost, rub.	1435.54	1435.54	890.2	890.2	890.2	726.7	726.7	726.7	1024.58	1024.58	1024.58	1435.54
Full cost price, thousand rubles	37487.78	37487.78	26405.04	26405.04	26405.04	20373.34	20373.34	20373.34	25747.78	25747.78	25747.78	37487.78
Profit from sales, thousand rubles	7545.06	7545.06	4621.78	4621.78	4621.78	3660.56	3660.56	3660.56	4892.69	4892.69	4892.69	7545.06
Income tax, thousand rubles	1509	1509	924.36	924.36	924.36	732,112	732,112	732,112	978.5	978.5	978.5	1509
Net profit, thousand rubles	6036	6036	3697.4	3697.4	3697.4	2928,448	2928,448	2928,448	3914.19	3914.19	3914.19	6036
Product profitability, %	16.8	16.8	14.9	14.9	14.9	15.2	15.2	15.2	15.9	15.9	15.9	16.8

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SYNTACTIC AND MORPHOLOGICAL FUNCTIONS OF ADJECTIVES

Abstract: The article is based on the analysis of books on Persian grammar and is devoted to the syntactic and morphological features of adjectives in them. From the point of morphology its views on semantic groups have been studied and generally stated. This process of analysis determines the great scientific significance of the article.

Key words: Adjective, syntactic features, izafa, determiner, definite, morphological features, possessive qualities, passive adjectives, comparative adjectives, relative adjectives.

Language: English

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Introduction

In all linguistics, a set of words denoting a quality is called an adjective. However, in addition to the adjective, the attribute is also specific to the adverb. Initially, the adverbs were not studied separately. Adjectives were studied as the part of speech. This is due to the fact that, as mentioned above, both adjectives and adverbs signify attribute. This means that the words that determine and complete the meaning of the noun are called adjectives, and the words that define and complete the meaning of the verb are called adverb. The noun described by the adjective is called mavsuf (مصوف) (حسن انوری، حسن احمدی) [گیوی فارسی]، جلد 1 صفحه 110 «دستور زبان

قلماییز بیباگل

موصوفصفتصفتمصوف

Persian adjectives represent not only the sign of the noun, but also the verb (a significant part of the original adjectives) [Yu.A. Rubinchik "Sovremenniy persidskiy yazik" p.56].

If the adjective defines an action, then it is considered to be the adverb and it is called

[ینج استاد «دستور» [qeyd-e mo'shtarak] قید مشترک

زبان فارسی» صفحه 189

علی خوب کار می کند

The connection between an adjective and a noun creates a determiner-definite relationship. In this case, the determiner is called مضاف الیه (mo'zof-e eleyh), definite مضاف (mo'zof) and they are connected by

اضافه (izofa) [Malik Abdusamatov: "Persian" Textbook for University Students, p. 76] In the following sentences we will see the example of izafilic compounds:

بخشایشگر بخشاینده ایزدینام

ستایش باد یزدان دانا و توانا را کی آفریدگار جهانست و داننده آشکار و پنهان و راننده چرخ و زمانست و دارنده جانور است و آورنده بهار و خزانست و درود بر همه پیغمبران ایزد و همه فرشتگان و همه پاکان کی اختیار و اولیای خدای عز و جل بودند و خلق را بر راستی پند دادند و به یزدان راه نمودند و فرش باطل را بر نوشتند و بساط حق بگسترده و آفرین بر همه نیکوکاران کی از هوای این جهان پرهیز کردند و توشه آن جهان برداشتند و رضای ایزد نگه داشتند.

فارسی قدیم کتاب

سعیدینگهت

Adjectives have their own characteristics and perform different functions in sentences. They differ in their position without depending on the noun:

a) اضافه توسیفی The adjectives preceded by the noun and the adjective serves to describe the noun. For example: اطاق بزرگ

Apparently, in this compound, adjective served to reveal the meaning of its definite, that is, to indicate its size.

b) مسند اضافه [mo'snad [predicate]] مسند [mo'znad [predicate]] the other words follow the adjective

For example:

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اطلاق بزرگ است.

[شعریعت محمدجواد «دستور زبان فارسی» صفحه 286]

In this sentence [بزرگ bo'zo'rg] the word – “big”[مسند mo'snad principal is predicate.

In addition to these two aspects, there are cases when adjective is used. In this case, it switches into another part of speech and acts as that part of speech:

a) when adjective becomes adverb:

As mentioned above it is the transition of adjective into an adverb. It appears in conjunctions with the verb:

For example:

او خوب می نویسد.

In this case, the adjective خوب (good) is connected to the verb می نویسد (minavisad (write)) and shifted to an adverb.

b) The case when an adjective becomes a noun:

It is formed from the substitution of adjectives for nouns.

For example:

از بد پرهیز کن.

[287]شعریعت محمدجواد «دستور زبان فارسی» صفحه

Depending on the meaning groups of the adjectives, there are specific forms of the order in which they come together with the noun. For example, [sefat-e foeli [possessive adjectives]] is associated with موصوف (mavsuf) in 4 different ways:

پنج استاد «دستور زبان فارسی» صفحات 49-50

a) In the state with izafa - the adjective precedes the noun and forms an izafilic compound by the means of kasra:

For example:

فزاينده باد اوردگه فشاننده خوب زاير سپاه

"فردوسی"

b) Without kasra, adjective depends on its definite:

جهاندار محمود گيرنده شهر ز شادی به هر کس رساننده

بهر

"فردوسی"

c) Adjective is directly connected to the noun without any means:

For example:

منم گفت يزدان پرستنده شاه مرا ايزد پاک داد اين کلاه

«دقیقی»

d) The adjective comes after the noun without the form «انده» (-ande).

For example:

سرفراز - سرفرازنده

گردن فراز - گردن فرازنده

In the first two forms, the adjective precedes the noun, and in the next two, it follows the noun. These cases show the diversity of syntactic nature of the adjective.

When we talk about the morphological features of adjective, first of all, we can see that their description is expressed differently in grammar books. Including meaning groups.

There are different opinions in grammar books about the meaning groups of this part of speech. In

particular, in " پنج استاد " (Panj ustod) they are divided into 4 groups:

صفت فاعلی

صفت مفعولی

صفت تفضیلی

صفت نسبی

Also, in the book of شعریعت محمدجواد فاعلی،

مفعولی، نسبی، توسیفی، شمارشی،

in the books of Doctor Khayyompur the adjective is divided into: صفت اشاره، صفت شماره، صفت استفهام، صفت ابهام صفت مطلق،

In the works of Hasan Anvari and Hasan Ahmadi, the following meaning groups of quality are distinguished:

بینی

اشاره ای

شمارشی

پرسشی

تعجبی

منهم

is subdivided into internal types such as ساده، فاعلی، مفعولی، نسبی، لیاقت

Generalizing them, we focus on each type of meaning group separately.

One of the meaning groups of the adjective is صفت فاعلی, which is possession. Possessive adjective is used to express a form of possession over an individual or an object. For example:

دارنده، دانا...

Possessive adjectives are formed in 7 ways:

1 With the addition of the suffix «نده» to the root of the verb in present tense. For example:

گیرنده...

2 With the addition of the suffix «آن» to the root of the verb in present. For example:

گیران...

3 With the addition of the suffix «ا» to the root of the verb in present tense. For example:

دانا...

4 With the addition of the suffix «ار» to the root of the verb in past tense (sometimes present tense). For example:

خریدار...

5 With the addition of the suffix «گار» to the root of the verb in present or past tense. For example:

آموزگار...

6 With the addition of the suffix «گر» to the root of the noun, adjective and verb. For example:

دادگر...

7 With the addition of the suffix «کار» to the root of the noun, sometimes adjective and verb. For example:

ستمکار

صفت مفعولی

Indicates that the action or state was performed on an individual or object. For example:

پوشیده...

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«ی» is formed by adding the short suffix «ی» to the root of verb in the past tense.

are classifying adjectives denote the ratio of a person or object to something or a place.

It is formed in 4 different ways:

1 With the addition of the suffix «ی» to the end of the word:

آسمانی...

2 By adding the suffix «ی» to the end of the word:

یک ساله...

3 By adding the suffix «ین» to the end of the word:

گندمین...

4 By adding the suffix «گان» to the end of the word:

پدرگان...

صفت لیاقت

Indicates the suitability of a person or object.

This adjective is formed by adding the suffix «ی» to the end of the infinitive form of the verb.

دیدنی، شنیدنی...

صفت تعجبی

These adjectives come with the noun and express the speaker's surprise at quality or volume of the noun. The adjective of surprise is expressed in a special tone that expresses the excitement of the speaker:

چه، چه قدر، عجب...

(abstract adjective) صفت مبهم

Indicates vaguely the type, quality, or quantity of the noun. For example:

هر، فلان، چندین...

(question adjectives) صفت پرسشی

It is used to ask the quality of the noun (such as interrogative pronouns in Uzbek):

چه، چه گونه، چند...

(adjectives that are used to count) صفت شمارشی

These indicate quantity of the noun. For example, when we say چهار تا دفتر (four notebooks), the number "four" indicates the quality of the noun and performs the function of adjective. It has 4 different types of meanings:

1 صفت شمارشی اصلی (it is equal to cardinal numbers in Uzbek):

یک، دو، سه...

2 صفت شمارشی ترتیبی (It is equal to ordinal numbers Uzbek):

چهارم، پنجم...

3 صفت شمارشی کسری (It is equal to fractional numbers in Uzbek):

سه چهارم، پنج ششم...

4 صفت شمارشی توزیعی (It is equal to distributive numbers in Uzbek):

یک یک، دو دو، چهار چهار...

حسن انوری، حسن احمدی گیوی «دستور زبان فارسی» [

جلد 1 صفحات 118-119]

صفت اشاره ای

When demonstrative pronouns این and آن come with the noun, they indicate the quality of the noun and perform the function of adjective. For example:

این گل زیبا را از باغ چینم.

Common demonstrative adjectives:

این، آن، همین، همان...

To conclude, adjective has both syntactic and morphological specific features. Syntactically in the phrase:

1) The adjective in the compounds performs the role of determiner and definite;

2) In the compound of determiner and definite, the determiner may come both before and after the determiner.

In the sentence:

1) The adjective associated with the noun comes as a determiner.

2) Coming before the predicate, it indicates the state.

3) Coming as the noun, it can be the subject, possessive determiner, object.

4) The noun comes as the predicate in simple unextended sentences. In this case, adjective comes after the noun and can take the suffixes of it.

Morphologically, no definite conclusion has been reached about the semantic groups of adjective. Their composition is expressed differently in the views of different scholars, and their number also varies slightly. In contrast to the Uzbek language, we can see that these groups include numbers and pronouns. In this case:

صفت شمارشی the number belongs to the part of speech.

صفت پرسشی and here, it belongs to pronoun.

In addition, predicative and degrees of comparison are included in the semantic groups.

Moreover, adjective can switch into the adverb.

It turns out that the adjective in Persian has its own form of expression.

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EXPLORING THE THEORETICAL FOUNDATIONS OF LINGUOSYNERGETICS AND ITS BASIC CONCEPTS

Abstract: Determining the nature of the phenomena of reality is an important and necessary step in learning the laws of functioning of various systems. The article deals with the study of the theoretical foundations of linguosynergetics and its basic concepts. The authors of the article think that reference to the principles of linguistic synergetics makes it possible to study the mechanisms of self-organization of language.

Key words: phenomena, reality, system, study of theoretical foundations, linguosynergetics, self-organization of language, mechanisms.

Language: English

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Introduction

Although synergetics is a relatively new science of self-organisation and self-development of complex systems, it is finding new applications in various fields of science and technology. A number of scientific works have already been written about it, in which an attempt is made to generalise the main regularities of complex systems identified in the natural sciences.

The creator of the synergetic trend is G. Khaken. He listed the following key points of this interdisciplinary scientific trend:

- The systems under study consist of several or many identical or heterogeneous parts, which are in interaction with each other.
- These systems are non-linear.
- When systems of different origin are considered, they are open systems which are far from a state of equilibrium.

- These systems are subject to internal and external fluctuations.

- Systems can become unstable.
- Qualitative changes occur.
- Emergent new properties are discovered in these systems.
- Spatial, temporal, spatial and/or functional structures emerge.
- Structures may be ordered or chaotic.
- In many cases mathematisation is possible [5, p.55].

The foundations of synergetics - the concepts of open, nonlinear systems and processes, deterministic chaos, dissipative structures and many others - were laid by G. Khaken and I.R. Prigozhin [6, p.404] and were further developed in various fields of natural science and the humanities: physics, chemistry, biology, sociology, pedagogy, linguistics, and also in art, culture, and communication (E.N. Knyazeva, V.I.

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Arshinov, D.S. Chernavskiy, V.G. Budanov, A.V. Voloshinov, I.A. Evin, V.G. Zinchenko) [2, p.228].

Main part

In recent years there has been a trend towards a convergence between the natural sciences and the humanities, and a growing interest among the humanities in the ideas and methods of synergetics. Synergetic understanding of multiple phenomena is gaining more and more followers in the world. Linguistics has not remained aloof from this scientific trend. A number of synergetic ideas, such as the non-linearity of the language system, openness and dynamic structure, are being developed by linguists.

In contemporary linguistics new aspects of the debate have emerged. The synergetic approach to the analysis of language deserves careful consideration. Synergetics (from the Greek *συν-* prefix meaning "togetherness" and *εργον* - "activity") has been actively used for more than 30 years in various fields of knowledge as a methodology of studying processes, self-organization in complex systems of various nature. Language is a complex, dynamic, self-organizing system. On this basis, the patterns identified in the theory of self-organisation (synergetics) of this new interdisciplinary field of knowledge can be extrapolated to the field of language and communication.

In our opinion, the synergetic analysis of language allows us to gain new knowledge about meaning formation, about the organization of communicative processes, and about language teaching methodology. Let us consider successively the mentioned directions of the project designated as "synergetic movement in language". We can also talk about the formation of a linguistic-synergetic direction related to the processes of self-organization in language as a communicative system. This new direction is characterised by an emphasis on systemic ideas and their implementation in the processes of modeling thought and speech generation. In Russian linguistics the introduction of systemic ideas in the study of language is associated with the works of I.A. Baudouin de Courtenay, A.A. Potebny, F.F. Fortunatov. In the twentieth century the system approach to the study of language was developed in the works of V.G. Admoni, J.D. Apresyan, N.D. Arutyunova, O.V. Aleksandrova, M.M. Bakhtin, F.M. Berezin, V.V. Vinogradov, L.S. Vygotsky, V.A. Zvegintsev, E.S. Kubryakova, A.A. Leontiev, J.M. Lotman, N.S. Pospelov, B.A. Serebrennikov, E.V. Sidorov, Y.S. Stepanov, L.V. Scherba, etc. [8, p.108]

Common to all researchers is the understanding of linguosynergetics as a science that studies the objects and processes of the language system hidden from direct observation. The solution of linguistic synergetic problems requires the introduction of a modern cognitive technology that differs significantly from the methods used by researchers in descriptive

and structural linguistics. The modern linguosynergetic approach uses the method of hypotheses and models used in most modern experimental sciences. Such an approach requires the researcher to consistently perform a number of time-consuming operations. Direct observation and verbal hypothesis making, usual for linguists, are considered, according to the linguosynergetic approach, to be the initial step of cognition. A prerequisite of linguistic synergetic research is the identification of spheres of speech and thinking activity where the action of internal mechanisms of self-organization and self-development is most likely to be detected. The researcher also needs to be clear and unambiguous about the formulation of the hypothesis, not excluding hypothesis, without ruling out the existence of various alternative hypotheses. The next step of the method is the transition to evidence-experimental testing of the hypothesis [12, p. 3].

Research in the field of linguosynergetic analysis has shown that its implementation has to take into account a number of linguistic antinomies. These include: the antinomy of the language system and the speech system, the antinomy of the collective language and the idiolect, the antinomy of collective or individual speech activity in normality and pathology, and the antinomy of synchronicity and diachronicity [12, p. 2].

Consideration of the first antinomy presupposes an understanding of the difference between the synergetics of language paradigms and speech and textual synergetics. The second antinomy distinguishes the study of synergetic mechanisms of speech of an individual speaker from the consideration of systemic language synergetic mechanisms and the speech system as a whole [9, p. 13]. Speaking of the third antinomy, scholars address the consideration of various pathologies of speech activity of both the subject and the object of communication, taking into account their influence on the mechanisms of speech generation and perception in the synergetic space [9, p. 58]. The fourth antinomy is characterized by the study of changes that occur in language and speech systems: the transition from the state of equilibrium to the region of chaos, and then to a new state or destruction [4, p. 221].

The linguosynergetic approach is associated with the functional-communicative theory of language, according to which language acts as a communicative system. Linguosynergetics considers language as a self-organizing system connected to the consciousness of communicative subjects and the general linguistic system [3, p. 65]. There is a constant interaction between these two systems that manifests itself in the rejection of excess information by the language's semantic system and its dissipation into the environment, which, in its turn, inflows resources that fill gaps in the language's semantic system. The interplay of these systems generates functional

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fluctuations and therefore deviations from the equilibrium state of the language's semantic field. The result of this interaction will be a movement of the language system towards the communicative goal as the most favourable mode of functioning. In linguistic synergy, the development of language systems is based on circular causal relationships. The components of the systems are in constant motion, interacting with each other [7, p. 170].

It is also worth noting that the methodology of systems linguistics has developed in the context of the affirmation of communicativity theory in philosophy. Thus, the process of communication is not only functional but also ontological. It is well known that systems methodology studies systems in statics, while the study of the dynamics of systems functioning is further developed in the concepts of linguistic synergetics. Using the methodology of linguistic synergetics, such complex systems as text, word, sign, mental activity, and speech activity are studied [8, p.108]. Detecting spontaneity in speech production, the linguosynergetic approach allows tracing the influence of communicative environment on the sign content of speech works. In this regard, traditional linguistic approaches to the analysis of language structure prove to be far from universal, while the ideas of synergetics on nonlinearity can be extrapolated to the discourse system.

Thus, today, linguistic synergetics, envisioned by I. A. Baudouin de Courtenay, is a new paradigm of cognition of language as a communicative phenomenon. The scholar made the connection between language features and the worldview and the insistence of people who speak certain languages. In all phenomena he tried to see speaking and listening people in real interaction. Baudouin le Courtenay revolutionized the science of language: before him, linguistics had been dominated by history and languages had been researched solely on the basis of written texts. He proved that the essence of language lies in speech activity and that it is important to study living languages and dialects in order to understand internal functional language. He also introduced the principle of experimental verification, which can be used to prove or disprove the truth of linguistic descriptions. [8, p. 109].

J.A. Baudouin de Courtenay was an opponent of the molodogrammatic branch of linguistics in matters of the universal-historical approach to the study of language and advocated a "descriptive" study of language, putting a line between statics and dynamics. Baudouin recognized the autonomy of these two phenomena and distinguished their particularities. The scholar wrote: "There is no stillness in languag... In language, as in nature in general, everything lives, everything moves, everything changes. Quiet, halting, stagnation is an apparent phenomenon, a particular case of movement with minimal changes. Static language is only a special case of its dynamics or rather kinematics" [1, p.45]. It is impossible not to agree with the scientist, because dynamics is an integral part of the development of language life, because if we look at the present situation, we will see that language develops only in society.

It should be noted that the scholar's works on statics and dynamics were further reflected by later scholars, and were also considered in the modern stage of his life and are still current topics that have taken a new turn in linguistics. One such scholar is Ferdinand de Saussure, who introduced the concept of synchronicity and diachronicity, which in Baudouin de Courtenay is statics and dynamics. The popularity of the study of this theory is due to the increasing interest of scientists in dynamics as a science, because if we look at the current world, we see the high rate of development of information technology and the rapid development of life. All this does not go unnoticed in relation to language [2, p.230].

Conclusion

Thus, synergetics has been actively used for more than 30 years in various fields of knowledge as a methodology for studying processes, self-organisation in complex systems of various nature. Language is a complex, dynamic, self-organising system. On this basis, the patterns identified in the self-organisation theory (synergetics) of this new interdisciplinary field of knowledge can be extrapolated to the field of language and communication. We think that reference to the principles of linguistic synergetics makes it possible to study the mechanisms of self-organization of language.

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INVESTIGATION OF THE SUBSEQUENT USE OF LANDS ALONG THE ARAZ RIVER CONTAMINATED WITH HEAVY METALS

Abstract: Heavy metals from human activities contaminate the soil by polluting it and thus affecting plant growth.

In this article, the amount of nickel in the leaves of plants along the Araz River was compared with the plants used in the experiment, and more nickel was found in the leaves of plants used in the experiment, as well as in the roots and stems of plants growing in heavy metal soils. Ethylenediaminetetraacetic acid (EDATA) has been shown to cause an increase in nickel levels, as in other metals. When we compare the amount of nickel in lettuce leaves with other plants, nickel is found more in lettuce than in other heavy metals.

Key words: Heavy metals, soil, plant, waste, nickel, plant root, plant leaf, physicochemical method, ion exchange, phytoextraction, Ethylenediaminetetraacetic acid.

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Introduction

Soil is one of the main ecological elements that make up the ecosystem and is an important material basis for human survival and development.

In modern times, due to the development of industry and the extraction of natural resources, the discharge of waste into the environment, mainly soil and water, has increased significantly, which has led to the accumulation of heavy metals. As a result, soil, groundwater, sediments, surface water, and air are polluted with dangerous heavy metals and toxic chemicals. These substances are considered one of the main threats to the world due to their inability to break

down into non-toxic compounds and their long-term effects. [1-3] Contamination of soil with heavy metals is one of the major environmental problems in the world.

Heavy metals have a specific gravity of more than 4.5 g / cm³ and contain more than 40 chemical elements. Heavy metals occur naturally in the Earth's crust. It is also dumped into the soil as a result of human activity, which leads to high concentrations of heavy metals in the soil. The most common heavy metals in contaminated soils are Pb, Cr, As, Zn, Mn, Cd, Cu, and Hg.

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The most common heavy metals in soils are nickel (Ni), lead (Pb), cadmium (Cd), arsenic (As), chromium (Cr), copper (Cu), cobalt (Co), zinc (Zn), manganese (Mn), aluminum (Al) and mercury (Hg). Among these heavy metals, As, Pb, Cd, and Hg are among the 20 most dangerous substances. [4]

Excessive dumping of heavy metals on agricultural lands results in the accumulation of large amounts of food plants and vegetables, which can lead to serious health risks for humans. Heavy metals are said to cause many diseases in humans, such as cardiovascular disease, cancer, psychological disorders, chronic anemia, kidney, nervous system, brain, skin, and bone damage. [5-15]

Heavy metals occur naturally in the Earth's crust. At the same time, it falls into the soil as a result of various production activities, which results in the presence of high levels of toxic metal compounds in the soil. Natural processes also cause soil contamination with heavy metals.

Methods for removing heavy metals from the soil are based on physical, chemical, and biological processes and can be classified as follows:

- physical methods that allow a high cleaning effect and a large amount of soil to be cleaned;
- very effective chemical methods;
- simple and easy-to-use physical and chemical processes;
- environmentally friendly and cost-effective bioremediation processes. [16-17]

Chemical methods use chemical events such as ion exchange and chemical reactions to stabilize heavy metals and metalloids and reduce them to less toxic forms. Chemical reagents are required for these processes. [18-24]

Over the past few years, nanotechnology has been widely used in many areas, including soil remediation. The use of nanoparticles (D <100 nm) in the extraction of heavy metals is considered appropriate for soil cleaning

2. Materials and Methods

Table 1 determined the concentration of heavy metals present in the soil by analyzing the soil samples taken for analysis, and the allowable concentration limits for compliance with the requirements of the standard.

Table 1. Amount of heavy metals for soil and permissible concentration limits of substances

Article	BBQH based on soil background, mg / kg		The concentration of heavy metals around oil refineries, NQ/kg		The concentration of heavy metals in soil samples taken from the territory of industrial plants, MQ/kg		The concentration of heavy metals in agricultural lands, MQ/ kg	
	according to the standard	the example we took	according to the standard	the example we took	according to the standard	the example we took	according to the standard	the example we took
Copper element (Cu)	30	35	21.60–60.20	23.50–66.60	10-264.9	11-268,1	28.64	29,01
Nickel (Ni)	20-60	25-71	21.23–34.15	26.03–38.19	18.53-66.67	19,3-67/9	253.7	258,32
Cobalt (Co)	5	7	-		7.88-14.58	8,90-15,9	25.05	25,81
Chrome (Cr)	6	8	43.22–0.15	49.72–0.60	20.66-264.43	21,54-745,32	138.4	141,11
Lead (Pb)	32-130	34-132	39.01–66.31	44.81–71.81	5.63-132.08	6,89-133,8	13.96	14.89
Zinc (Zn)	23	24	121.52–178.91	129,33-181,08	32.48-271.68	33,76-276,8	45.26	47,1
Manganese (Mn)	500	509	456.45–789.68	466,9-881,8-1	347.77	351,9	665	701
Cadmium (Cd)	0.2	0,23	0.56–1.43	0,58-2,1	0,18- 0,96	0,188-0,99	0.26	0,28
Arsen (As)	2	3	3.4–7.43	3,8-8,1	7.46	8,43	5.89	5,99
Mercury (Hg)	0.06	0,07	0.016–0.356	0,019-0,387	-		0.159	0,164

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Concentration criteria for hyperaccumulative plants (% in leaf dry matter) Cd \geq 0.01, Pb \geq 0.1, Co \geq 0.1, Sb \geq 0.1, Cu \geq 0.1, Ni \geq 0.1, Mn \geq 0, 1 and Z \geq 1.0 were adopted.

However, in the samples we took for analysis, the number of heavy metals exceeded the standards,

which is due to the human factor and the ongoing civil war in these areas.

As phytoextraction is a safe, least destructive, environmentally efficient, and economical treatment technique that allows large-scale soil cleaning, it is advisable to remove heavy metals from the soil by this method.

Table 2. The most modern methods of soil cleaning

Article	Advantages	Restrictions	Applicability
Land change	Effective for high levels of pollution	Large workload, production of expensive, hazardous waste, and adverse effects on the soil	Long-lasting
Vitrification	Easy to apply, applied to various metals	Expensive due to energy demand	Long-lasting
Thermal desorption	Safe, less re-contamination, and less energy consumption	Suitable for mercury only For other metals such as lead, arsenic, cadmium, and chromium, initial cleaning is required	Long-lasting
Soil washing	Effective, completely cleans metals	Extractors create an environmental problem, the efficiency of which varies depending on the soil, metal and the type of extractor	Long-lasting
Solidification / stabilization	Chemical agents are less harmful because they remain only in the treated area	Contaminants are not removed	Contaminants are not removed
Nanotechnologies	Apply to large areas, high efficiency	potential toxicity of nanomaterials, the interaction of soil and nanoparticles, formed particles	Large-scale, long-term
Electrochemical cleaning	Very effective for saturated clay soils	Environmentally unacceptable, the nature of the spread of metals	Long-lasting
Microbial bioremediation	İqtisadi əlverişli, remediasiya üçün az vaxt tələb olunur	Mikroorqanizm, torpaq, bitki və metal növündən asılıdır	Geniş miqyaslı və uzunmüddətli
Fitovolatizasiya	Economically viable and less destructive	Volatile metals are formed, causing environmental problems, which are not controlled after the release of the metal into the atmosphere	mall and medium scale, long-term
mall and medium scale, long-term	destructive	Temporary solution, efficiency varies depending on soil, plant and metal type	Kiçik və orta miqyaslı və qısamüddətli
Phytoextraction	Highly economical, environmentally friendly, less destructive	Efficiency depends on the tolerance of the plant, the bioavailability of metals in the soil.	Large-scale and long-lasting

3. Results and Discussion

3.1 Study of plant development in soils used in scientific research and with the addition of heavy metals

The soil to be used in our study was brought from fertile soils near the Araz River. The imported soil was sieved in August 2021 to obtain a more homogeneous structure. For each plant species, 11 plants will be planted, 3 of which will be in the raw

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soil for control purposes, 11 in the heavy metal-mixed soil, and a total of 14 pots have been prepared, 3 of which are in the soil. 1 should be controlled as raw soil and 2 as heavy metal soil. After labeling the prepared containers, 6 kg of soil is poured from the filtered soil into each container.

Prior to the addition of heavy metals, samples were taken from the soil used for each plant and the amounts of Pb, Ni, Cu, Zn, and Cd were analyzed separately. The following is the average of the 5 samples examined. (Table 3)

Table 3. The average amount of heavy metal in the first soil not contaminated with heavy metals from which plants will be grown

Heavy Metal	Analysis Result (mg / Kg)
(Pb)	10,24 ± 0,53
l (Ni)	63,59 ± 0,52
(Cu)	27,48 ± 1,38
(Zn)	47,01 ± 2,00
(Cd)	0,2 ± 0,10

Cadmium (Cd), nickel (Ni), copper (Cu), zinc (Zn), and lead (Pb) were used as heavy metals. The chemical salts used are given in Table 4.

Table 4. Chemical salts used

Ağır Metal	%	Tuzu	Hər qaba əlavə olunan məbləğ
Kadmiyum (Cd)	%98'lik	$Cd(CH_3COO)_2 \cdot 2 H_2O$	0,4522 qram Cd
Nikel (Ni)	%98'lik	$Ni(NO_3)_2 \cdot 6 H_2O$	0,6750 qram Ni
Bakır (Cu)	%98'lik	$CuSO_4 \cdot 5 H_2O$	0,4756 qram g Cu
Çinko (Zn)	%98'lik	$ZnSO_4 \cdot 7 H_2O$	0,3627 qram g Zn
Kurşun (Pb)	%98'lik	$Pb(CH_3COO)_2 \cdot 3 H_2O$	1,4976 qram g Pb

Heavy metals were added to the soil samples in two batches with an interval of two days. After the chemicals to be added were weighed accurately, they were dissolved in 500 mL of distilled water and 8.20 mL of solution was added to each pot. The pots are watered abundantly. In order to avoid toxic effects on the seeds, 500 g of soil was added after each coarse metal was added.

The plants in our study were selected from plants that can be grown in the region.

Lettuce (*L. activa Sativa* Var. *Longifolia*), beans (*Phaseolus vulgaris*), summer pumpkin

(*Cucurbita Pepo*), corn (*Zea mays*) and radish (*Raphanus sativus* var. *Radicula*) were selected from a total of 5 plants. Plant seeds were purchased from the Chamber of Agriculture. Taking into account the risk of each seed falling into the pots, 6 corn, beans, and pumpkins were planted at a depth of 2-3 cm on each axis, a pinch of radishes and lettuce were planted

in the soil and 500 mL. water was added to the containers. Plant specimens were released to grow in natural weather conditions. The remaining plants and 3 non-seeded pots for each plant were irrigated according to ty.

3.2 Preparation of soil sample for analysis

After the raw soil is sieved and placed in pots, equal amounts of soil samples are taken from the containers allocated to each plant and mixed. Samples were taken from the soil taken separately for each plant and placed in sample containers, first in an oven at 105 ° C for 2 hours and then in a desiccator for 2 hours. Samples were drawn and placed in the oven at 105 ° C for 2 h and then stored in a desiccator for 2 h. The amount of moisture is calculated after taking samples from the desiccator.

Samples taken to examine the heavy metal content in the soil were stored in an oven at 105 ° C

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for 2 hours and then in a desiccator for 2 hours. Samples of 05-1 g were taken for heavy metal analysis and placed in the Teflon cells of the microwave oven. 2.5 mL of HNO₃ and 7.5 mL of HCl were added. After waiting for 10 minutes, it was lit in the microwave (BERGHOF VMS-3 Speed Wave) in the program shown in the table below

Ethylenediaminetetraacetic acid was added to 4 of the 8 containers containing heavy metal contaminated soil 10 days prior to harvest.

(EDTA) was added. 30 mmol EDTA was added to each coarse.

(EDTA: C₁₀H₁₄N₂Na₂O₈ 2H₂O) [12]. The results are shown in Table 5. The microwave program is given in Table 6

Table 5. Growth cycles of plants

PLANT	Growth rate
SWEET CORN	38 day
beans	58 day
PUMPKIN (storm)	59 day
radish	68 day

Table 6. The microwave program is given in microwave software

addm	1	2	3
T °C	140	160	175
Ta (min)	5	3	3
Time (min)	5	5	20

The sample from the microwave was filtered and diluted to 50 ml. later

Heavy metals were determined at the ICP-OES (Inductive Connected Plasma Optical Emission Spectrometer) (Perkinelmer Optima 2100 DV).

Result

Sufficiently large plants are cut close to the ground. Then the stem and leaves separated. The leaves and stems separated from each other were pulled one by one without wasting time. After the stems and leaves of all plants have been cut and the pulling process completed, the root part has been removed from the soil. The soil removed from the pot

was taken to a large bowl to completely remove the root part from the soil. The soil softened by pouring a certain amount of water. The root is removed from the softened soil and washed in plenty of clean drinking water to clean the remaining soil inside the root. After removing water from the washed root, the roots were weighed accurately. The irrigated soil is placed in plastic bags, then placed in containers and allowed to dry to keep the amount of metal in it. The stems and leaves of the drawn and marked corn plant were cut into smaller pieces and placed in aluminum foil containers and kept in the oven at 105 ° C for 1 day to dry.

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IMPLEMENTATION OF MAYDON'S THEORY IN LINGUISTICS

Abstract: This article discusses the implementation of maydon theory to linguistics and theoretical ideas about maydon theory.

Key words: field theory, microfield, macro field, thematic field.

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Introduction

Everything in existence is interconnected as a system. In the 1940s, the Swiss linguist Charles Balli coined the term "associative field". As he writes, the concept of "associative maydon" is a flexible (elastic) concept, as evidenced by the fact that the size of these associations is not the same in different people: it should be borne in mind that the field can include near and far associations. According to the scientist, if a character has motivation, then it is based on internal associations (tree, its associative taxa: branch, leaf, bark, birch, etc.) and vice versa based on internal associations based on a sign of merony (part of the whole, e.g. steering wheel; contact with the whole object: house, car)

In recent years, systematic research in linguistics has begun to receive more attention. The peculiarity of this research is that it does not approach linguistic facts autonomously, but focuses on revealing the essence hidden under each phenomenon. The researcher focuses more on the relationship between linguistic phenomena.

Ferdinand de Saussure, the founder of structural linguistics, drew the attention of linguists to the discovery of the relationship between linguistic units and identified the existence of paradigmatic and syntagmatic types of relationship. The unification of linguistic units into specific paradigms based on a specific unifying meaning later gave rise to field theory in linguistics. In linguistics, "meaning" is combined with commonality and a field is defined as

a set of language units (mainly lexical units) that reflect the conceptual, subject, or functional similarity of the events being identified.

Materials and Methods

The unification of linguistic units on the basis of a certain meaning, the unification of lexical units of a certain language into such semantic cells has developed in Eastern linguistics. Later, in the 19th century, the idea of grouping linguistic units into semantic groups or dividing the whole into specific semantic groups flourished in Europe. Accordingly, this theory is inextricably linked with European linguistics. In the 19th century, M. Pokrovsky drew attention to the generality of lexical (generally) linguistic units (i).

The theoretical interpretation of the concept of Maydon can be seen in the works of I. Trir, G. Ipsen, V. Porsig, L. Weisgerber, A. Yolles, and later the theory was developed by A.A. Ufimseva, N.I. Filicheva, YN Karaulov, GS Shchur. It should be noted that field theory has entered linguistics as a concept of semantic field. So what is the basis for the emergence of content field theory? The emergence of this theory dates back to the 20s and 30s of the last century, when it was associated with a rethinking of Humboldt's theory of the "internal form of language." The scientific debate over the "internal form of language", which was the main object of long-term linguistic research during this period, gave rise to this theory.

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The term "meaningful Maydon" was interpreted differently by researchers at the time. I.Tirre meant "field of concepts", "scope of concepts" as a semantic field. L. Weisgerber "a certain part of the content of language", "part of the structure", V. Porsig "the essential dependence of meanings", G. Ipsen semantically and grammatically related group of words as a semantic field reaches A. Yolles calls it a "semantic union" and defines antonymous pairs within it. F. Dornzaif and W. Wartburg see the semantic field in the lexical structure of language - separable semantic groups. comprehension can be combined with learning the language in all its aspects and in different relationships. Humboldt's doctrine of the "internal form" was interpreted by L. Weisgerber and I. Trier in terms of its conceptual essence, by G. Ipsen and V. Porsig by the semantic group and system of words, and by F. Dornzaif and Wartburg in terms of the lexical structure of the language. and developed in terms of a group of concepts.

The theoretical basis of the new Humboldtian direction in semantics is the law of lexical division of language, the division of language structure the laws derive from the "internal form of language." Humboldt understood the "internal form of language" as, first of all, a constant element of mental activity, which raises the level of expression of the sound. His later followers argue that the main task of language learning is to find "a unique conceptual idea that manifests itself in a new way, in a puzzling way, in the semantic structure of different languages."

F. de Saussure can be said to have guided the neo-Humboldtists in clarifying the above question. According to F. Saussure, language has its own system, which is a system of mutually conditioned signs. Saussure redefined the law of division of language by studying language as a closed system of conditional signs that were important only when they were opposed to each other. Explaining the mechanism of division of language as a certain structure, he writes: a small piece that unites is the article, and the sound is the sign for the idea".

Behind every word is a system of sounds, situations, and conceptual connections. A word is a network of multidimensional connections. Normally, some methodological connections (e.g., figurativeness) are ignored, with spiritual connections leading the way. Saussure: "Language's attitude to thought is that its characteristic function is not to create a material sound medium to express an idea, but to mediate it between thought and sound. In this case, their combination leads to a two-sided delimitation of units. Chaotic thinking, which is inherently chaotic, becomes clear as a result of a need," he said. Humboldt and his later followers were united by F. de Saussure's understanding of the nature of the structure of language as a closed system organized by its own laws. "Every language is a system of choices based on and opposed to objective reality," says Thierry..

L. Weisgerber's work was one of the decisive researches that helped to form the concept of "maydon" in linguistics. According to Weisgerber, language should be studied not as a simple means of spiritual content, but as an intellectual form of the world, and that semantics should be a doctrine of concepts, not a science of meanings. In contrast to I. Trier and L. Weisgerber's interpretation, the next group of scholars of the new Humboldtism, such as G. Ipsen, V. Porsig, A. Yolles, F. Dornzaif, F. von Wartburg, made the whole lexical group of words or language the object of linguistic research. content. In a comparative-historical study of the lexicon of ancient Indo-European languages, G. Ipsen first used the term "semantic field" to refer to a group of words denoting metal names in Eastern languages. based on the fact that it is functionally limited and forms a separate group. V. Porsig introduced the concept of semantic field to the science of semiotics, which sought to reveal the theory of the field on the basis of the study of speech. According to him, the semantic field is related to the main relationships established between words in a particular language, and arises from the relationship between verbs, adjectives and nouns that perform a predicative function. Simultaneously with W. Porsig, F. Yolles also introduced a new interpretation of the semantic field into linguistics. He showed that units belonging to a particular whole belong to this group as they represent some aspect of that whole. In recent years, a number of studies have been conducted on the problems of Maydon's theory. G.Shchur notes that more than a thousand articles have been published on field issues. By studying such theoretical researches in detail, they can be generally divided into certain groups in terms of history and problems. This can be distinguished mainly by considering the individual concepts of the theory in chronological order, proving them, studying them in terms of the problems posed by the theory, as well as the fact that field theory is carried out in conjunction with historical and problem analysis.

In linguistics, the development of field theory in recent years has reached such a level that its ideas and methods have begun to be applied not only to the lexical level of language, but also to other levels. Preliminary research provided a theoretical basis for the discovery of general laws for the construction of various dictionaries (mostly thesauruses) based on the scope of the content field. Later, other areas of language, including morphosemantics and grammar, developed significant works in this area. The interpretation of the concept of field and the individual approach to its specific features have created various problems in the study of field theory. Problems based on the accuracy of the boundaries of the field, the autonomy, integrity, continuity of the field as a linguistic unit, or the relativity of the field independence, the broad nature of the interaction of the fields; problems with the structure of the fields

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(open - no space in the field); problems of field and polysemy relations have been raised on the basis of whether polysemous words belong to only one field or may be elements of several fields. Depending on the characteristics of the field, these problems are solved by researchers in different ways. In Uzbek linguistics, there are a number of views on the interpretation of the field.

Conclusion

Thus, in Uzbek linguistics, the study of language units on a field basis is widely practiced. This method,

in our opinion, is very important, especially in the study of vocabulary. Considering the Uzbek lexicon as a macro-field, dividing it into micro-fields is very effective in creating thesauruses and ideographic dictionaries. Therefore, an in-depth study of the theoretical basis for the division of the linguistic field and the structure of the language dictionary into such areas is one of the most pressing issues facing modern Uzbek linguistics.

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CONFIRMATION OF A COMPREHENSIVE METHOD OF CALCULATING OUTPUT POWER OF HE-NE LASERS

Abstract: In this paper, the method of estimating the He-Ne laser output power was tested by matching with experimental data for such case as an active element in the form of a cylindrical tube. The result of this comparison showed a great deal of the results obtained by the previously proposed method with the experience.

Key words: effective mode volume, population inversion, He-Ne laser power, tube geometry.

Language: English

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Introduction

This paper continues a variety of articles devoted to methods of calculating the energy parameters of a gas-discharge (e.g., He-Ne) laser. In the article [1], a new method was proposed for finding an approximate solution of the homogeneous Helmholtz equation with homogeneous boundary conditions. This method was applied to find the gain of a gas-discharge laser with an arbitrary cross-section of the active element. Various cross-sections were considered - circle, rectangle, ellipse [1], regular polygons [2], hyperbolic polygons and various unconventional and exotic sections [3-6]. In future, this method of finding an approximate solution of the homogeneous Helmholtz equation was generalized to an inhomogeneous boundary condition [7]. A new method was proposed for estimating the output power of a He-Ne laser with an arbitrary cross-section of the active element, using the concept of effective mode volume, and it was applied to find the power of a He-Ne laser with sections of the active element in the form of a circle, rectangle and ellipse [8-11]. In future, a positive DC discharge tube was considered under discharge

conditions typical for a He-Ne laser and expressions were obtained linking the external parameters of the tube (changing the radius of the discharge channel, gas inlet pressure and discharge current) with "internal" characteristics (concentration of charged particles, electron temperature, intensity of the "longitudinal" electric field) [12-13]. Further studies made it possible to clarify the effect of the transverse dimensions of the tube on the electronic temperature of the discharge and on the value of the inverse population, which led to more accurate calculations of the output power of the He-Ne laser [14].

In this article, we return to the output power of a He-Ne laser with an active element in the form of a cylindrical tube. Although in [8-10] the results of calculations using the proposed method were verified with experimental data, but an additional check is never superfluous. We compare the results of our calculations with classical fundamental experimental work on the He-Ne laser.

He-Ne laser output power

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First, let us recall the essence of the proposed method for estimating the output power of a He-Ne laser. Let the active element of the He-Ne laser be of length l placed in an optical resonator with the radius of curvature of mirrors R_1 and R_2 and distance between mirrors d (then the radius of curvature of the corresponding equivalent confocal resonator R_e is found by the formula: $R_e = \{4S(R_1 - S)\}^{1/2}$, where $S = d(R_2 - d)/(R_1 + R_2 - 2d)$). The electric field in the resonator for the main Gaussian mode TEM_{00} in cylindrical coordinates (r, φ, z) has the form:

$$|E| = E_0 \sqrt{\frac{2}{1 + \xi^2}} \exp\left[-\frac{kr^2}{R_e(1 + \xi^2)}\right] \quad (1)$$

where $\xi = 2z/R_e$, E_0 – modulus of electric field when $\xi = 1$ and $r = 0$, $k = 2\pi/\lambda$ – wavenumber, z it is counted from the Gaussian beam jumper. Beam radius (defined as the distance at which the mode field TEM_{00} will decrease by e times compared to the value on the axis) at the mirrors and on the jumper, respectively, will be equal to:

$$w(z) = \sqrt{\frac{\lambda}{2\pi} R_e (1 + \xi^2)} = \sqrt{\frac{1}{k} \left(R_e + \frac{4}{R_e} z^2 \right)} \quad (2)$$

Let a He-Ne laser have an active element having a cross-section of arbitrary shape Ω . In the first approximation, the distribution of the population inversion of the active medium δN in this laser satisfies the homogeneous Helmholtz equation with a homogeneous boundary condition:

$$\Delta(\delta N) + \gamma^2(\delta N) = 0 \quad (3)$$

$$\delta N|_{\Gamma} = 0 \quad (4)$$

where Γ – is the boundary of the region Ω in which the solution (3) is sought. The concept of effective modal volume is introduced NMV – which is bounded by a surface where the value of $|E|^2 \delta N$ decreases by e^2 times compared to $E_0^2 \delta N_0$ (where δN_0 – is the value of the inverse population of δN on the axis of the active element). Then, to estimate the output power of a laser with an arbitrary cross-section of the active element, it is proposed to use the following formula:

$$P = \int_{NMV} \varepsilon E^2 \delta N dV \quad (5)$$

where ε – is the corresponding proportionality coefficient.

For the simplest case of an active element in the form of a cylindrical tube, it can be obtained that NMV – is a rotation figure with a z -dependent cross section in the form of a circle of radius ρ , such that:

$$\{2 + \ln 2 - \ln(w^2(z)k / R_e) - 2r^2 / w^2(z) +$$

$$+ \ln(J_0(\mu_1^{(0)} r / a))\} |_{r=\rho} = 0 \quad (6)$$

where a – is the radius of the tube, r – is the distance to the axis, J_0 – is the zero-order Bessel function, $\mu_1^{(0)} = 2.4048$ – is the first solution of the function J_0 . Replacing the Bessel function with an approximate decomposition $J_0(x) \approx 1 - x^2/4 + x^4/64$, formula (5) for a cylindrical tube can be simplified to a one-dimensional integral:

$$P = \int_0^{2\pi} \int_{z_1}^{z_2} \int_0^{\rho(z)} \varepsilon E^2 \delta N d\varphi dz r dr =$$

$$= \frac{4\pi E_0^2 \delta N_0 \varepsilon R_e}{k} \int_{z_1}^{z_2} dz \left(\frac{1 - \exp(-2\rho^2(z) / w^2(z))}{4} - \right.$$

$$\frac{\mu_1^{(0)2}}{32a^2} (w^2(z) - (w^2(z) + 2\rho^2(z)) \cdot \exp(-2\rho^2(z) / w^2(z))) +$$

$$\left. + \frac{\mu_1^{(0)4}}{512a^4} (w^4(z) - (w^4(z) + 2w^2(z)\rho^2(z) + 2\rho^4(z)) \cdot \exp(-2\rho^2(z) / w^2(z))) \right) \quad (7)$$

where $\rho(z)$ – solution (6), z_1 and z_2 – coordinates specifying the position of the tube inside the optical resonator ($z_2 - z_1 = l$).

On the other hand, the output power of a He-Ne laser with a cylindrical tube can be estimated using a well-known formula that gives excellent agreement with the experiment:

$$P = A w_0 G_m \left[1 - (a_c / G_m)^{1/2} \right]^2 \pi w_1^2 \cdot \left[1 - \exp(-2r_0^2 / w_1^2) \right] \quad (8)$$

where $A w_0 = 30$ W/cm² – saturation coefficient, $G_m = 3 \cdot 10^{-4} l / (2r_0)$ – the total unsaturated gain in the center of the Doppler-widened gain loop of Ne atoms, l – the length of the active part of the capillary, a_c – total loss ratio, r_0 – capillary radius, $w_1 = \{\lambda R_e / (2\pi)\}^{1/2}$ – the radius of the beam on the output mirror. In [8-10], the results of calculations according to formula (7) were compared with both experimental data and calculations according to formula (8). In this paper, we added experimental data for comparison.

Calculation and comparison with experiment

We have taken experimental data from well-known classical fundamental works on He-Ne laser [15-16]. The parameters of the corresponding lasers are given in Table 1.

Table 1. Laser parameters and calculation results

Laser number	1	2	3	4	5
Work	[15]	[15]	[15]	[15]	[16]
l , m	0.125	0.55	0.65	2	0.11
a , mm	0.75	1.5	2.5	4	1.5

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d, m	0.22	0.7	0.8	2.15	0.25
R_1, m	0.5	2	2	10	3
R_2, m	∞	∞	∞	∞	10
P (from work), mW	0.4	6.5	8.2	105	1
P (from (7)), mW	0.38	6.45	8.15	104	1.02

The calculation for these laser parameters was carried out according to formulas (1)-(7). In comparison with the works [8-10], the calculation program was rewritten from Java to C++. The last two rows of Table 1 show the power values from the corresponding articles and calculated by us using the formula (7).

Conclusion

The results of the evaluation of the He-Ne laser output power for the case of an active element in the

form of a cylindrical tube according to the proposed method are in good agreement with experimental data. This once again proves the correctness of this method. Currently, new experimental data on the He-Ne laser output power are being searched for in the case of an active element with sections in the form of a rectangle and an ellipse for further verification of the method, as well as the search for the optimal cross-section shape of the active element in terms of output power.

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INNOVATIVE RESEARCH OF NATIONAL WISDOM IN WORKS OF NIZAMI GANJAVI

Abstract: In academic work based on different historical and written scientific sources, archival documents have been studied the various moral values in rich heritage of this genius poet and thinker as the samples of national wisdom of the Azerbaijani people. Scientific work deals with the research of the exceptional significance of examples of islamic values, national-moral traditions contained in the works of Sheikh Nizami in the study of our national and spiritual values on the basis of numerous artistic examples. This article examines the significance of the works and scientific-literary heritage of Nizami Ganjavi as the source in the study of the environment of the Renaissance, as well as in the research of the multicultural values of our people, the traditions of coexistence, on the basis of examples from poems of this great thinker. Along with rich libraries, madrassas, scientific and cultural environment of Ganja, which is considered one of the important scientific and cultural centers of the Renaissance period, the article contains such important spiritual values as national memory, moral values, historical and ethnographic heritage of our people, which have traditions with millennial past, traditions of tolerance are studied as significant indicators of the worldwide heritage of Nizami Ganjavi. Also, on the basis of a scientific study of the appeal to the national memory, historical roots and religious values of our people, the great poet, who has repeatedly stated in his works the national identity and heritage of glorious ancestors, undeniable indicators of oriental wisdom, humanity, and devotion to universal values are clearly demonstrated.

Key words: Azerbaijan, Ganja, Renaissance period, Sheikh Nizami, national-spiritual and religious values.

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ИННОВАЦИОННОЕ ИССЛЕДОВАНИЕ НАЦИОНАЛЬНОЙ МУДРОСТИ В ТРУДАХ НИЗАМИ ГЯНДЖЕВИ

Аннотация: В научной работе на основе разных исторических, а также письменных научных источников, в том числе архивных документов изучаются многовековые духовные ценности в богатом наследии этого гениального поэта и мыслителя как показатели народной мудрости населения Азербайджана. В статье исследуется исключительное источниковедческое значение примеров религиозных традиций, как составной части национально-духовных ценностей нашего народа, содержащихся в творчестве шейха Низами, на основе многочисленных художественно-литературных примеров. В научном труде исследуется значение трудов, а также научно-литературного наследия Низами Гянджеви как источников в изучении среды эпохи Ренессанса, а также в исследовании мультикультурных ценностей нашего народа, традиций сосуществования, на основе приводимых примеров из произведений великий

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мыслителя. Наряду с богатыми библиотеками, медресе, научной и культурной средой Гянджи, считающейся одним из важных научных и культурных центров эпохи Возрождения (Ренессанса), в статье такие важные духовные ценности как национальная память, моральные ценности, историческое и этнографическое наследие нашего народа, имеющие традиции с тысячелетним прошлым, традиции толерантности изучаются как значимые показатели всемирного масштаба наследия Низами Гянджеви. Также на основе научного исследования обращения к национальной памяти, историческим корням и религиозным ценностям нашего народа, великого поэта, неоднократно констатировавшего в своих произведениях национальную идентичность и наследие славных предков, ярко демонстрируются неоспоримые показатели Восточной мудрости, гуманности, преданности общечеловеческим ценностям.

Ключевые слова: Азербайджан, Гянджа, Ренессанс, Шейх Низами, национально-духовные и религиозные ценности.

Introduction

*The power is only in science,
No one else can dominate anyone.
Sheikh Nizami Ganjavi*

Выдающийся просветитель Ренессанского периода, великий Азербайджанский поэт и мыслитель Низами Гянджеви (1141-1209), считается одним из самых известных представителей культуры и литературы всемирного масштаба. Этот великий ученый, автор величайших литературных произведений – «Хамсе» (Пятерице) получивший свое вдохновение с небес и опирающийся на мудрость народа, украсил свои произведения жемчужинами фольклора и дал им духовные узоры, которые будут существовать вечно. На фоне этих закономерностей моральные ценности азербайджанского народа были представлены в целом на уровне законов мироздания.

Нужно особо отметить, что в творчестве Низами Гянджеви народная мудрость сочетается с чудодейственной силой художественного слова. Ведь именно в произведениях великого мыслителя Шейха Низами повествование ашугув сравниваются с песнями пророка Давида [36, с. 67-70]:

Песни небесные пророка Давида,
Стали бесценными устами народа.

В стихах Низами все, что кажется обыденным и простым, превращается в мудрость:

Огонь не прост, хотя и зажигает,
То, что быстро горит, то также погибает.

Пословица выражает так же эту идею: «Кто быстро горит, тот быстро гаснет» [1, с. 58-59].

Также следует отметить, что нет особой необходимости использования источников или научных аргументов для доказательства национальной (этнической) принадлежности Низами Гянджеви. Потому что, духовность наследия и личности Низами смешалась с мудростью азербайджанского народа и стала единой системой, проникла в сердца и поразила разум. Произведения гениального поэта украшены рассказами, пословицами и притчами

таким образом, что отрицать его тюркские корни так же нелогично, как отрицать Солнце.

Опираясь на божественную силу слова на протяжении веков, наши мудрые предки, пытавшиеся освободиться от сил зла, сжигали целебное растение «узерлик» (гармала). Низами Гянджеви умело превратил этот обряд в средство художественного выражения [34, с. 9137-9138]:

Ива стала говорить, словно боясь человека,
Но на помощь пришел своевременный дым гармала.

Подобно легкому ветерку с ив человека могут сглазить, а маленькие семена внутри мака подобны гармалу.

Хотя большинство произведений Низами Гянджеви написано на персидском языке, оно богато образцами фольклора, отражающими тюркский дух нашего народа. По этой причине очень трудно войти в мир смыслов, вытекающих из пера поэта, не зная тюркского фольклора. Кроме того, сравнение довольно разных миниатюр со строками Низами, которые они были призваны иллюстрировать, показывает, что художники не просто следовали букве текста, а проявляли при этом большую фантазию и креативность, привнося обилие «живых наблюдений, придающих стилю живописи черты реалистической убедительности». Они не цитировали текст, им не требовались инструкции к детальному его отражению. Напротив, они успешно его домысливали, творчески моделируя описываемую у Низами ситуацию, тяготея к подробному повествованию. Исследователями, в частности, К.Керимовым, отмечалась эта особенность миниатюр, «оживлённых дополнительными персонажами, непредусмотренными литературным сюжетом». В «Семи красавицах», к примеру, Низами в нескольких строках (четырёх бейтах) говорит о музыкальных талантах Фитне, сопровождавшей шаха Бахрама на охоте:

При всей красе своей она прекрасно пела,
Искусно играла на руде и была быстроногой
в пляске. Когда под звуки руда она пела,
То птицы слетались к ней отовсюду.

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На охоте, на пирах с вином и рудом больше, чем всех других, шах желал слушать её голос и песни.

Оружием её был чанг, а оружием шаха - стрелы.

Она была по струнам чанга, а шах бил дичь.

Сюжет охоты, где она развлекала шаха своей музыкой в то время, как он искусно охотился на онагров был очень популярен среди миниатюристов. Они живописали главных героев, онагров, и музыкальный инструмент - чанг, в то время как в оригинале говорится, что она прекрасно играла на двух инструментах, из которых чанг (арфообразный) упоминается дважды, в то время как руд (лютнеобразный) – трижды. Однако художники, почему-то, отдали своё предпочтение именно чангу и только ему. Обращает на себя внимание факт, что на всех иллюстрациях этой сцены есть ещё то, что не описано Низами, но воспринималось художниками как обязательное. Прежде всего, это свита, которая, как известно, «играет короля», а что ещё более важно с интересующей нас музыкальной точки зрения, это мужская фигура, держащая под уздцы лошадь, на которой сидит играющая на чанге Фитнэ.

Materials and methods

Литературный язык поэта настолько богат системой метафор, что большинство идей используется в более художественном смысле, чем в прямом смысле. В этом примере «загустить звезду дымом» - это преувеличение. Сжигание гармала связано с обрядом изгнания нечистых сил.

Человек не должен забывать про мир иной. Потому что, жизнь души вечна. Мировая жизнь - это испытательный полигон. В Низами Гянджеви часто вспоминают переход между двумя мирами. Согласно философскому учению Низами, нельзя забывать про смерть и быть готовым встретить загробную жизнь в любое время [6, с. 50-52].

Мир не вечен и время от времени этот смертный мир никому не предоставляется. Образно выражаясь: многие Соломоны прошли через этот мир. Имя Соломона на своем месте, но самого его нет в живых.

Не спрашивай часто, где богатство и земли Соломона?

Земли на месте, а где же душа Соломона?

Жизнь в этом мире основана на борьбе между добром и злом. Все правители забыли справедливость, за исключением праведного пророка Соломона, который сочетал царствование с пророчеством. Истинные люди стали невидимыми, как феи, из страха перед несправедливостью. Если вы будете искать их при дневном свете, вы не найдете их [34, с. 9138-9139]:

Исчез Соломон благородный спустя века,

Ото лжи не видно никак человека.

Вспомним народные мудрости, пословицы о пророке Соломоне: «Мир, который не оставлен Соломону, не останется никому». «Здесь прошло много Соломонов» и др.

Но здесь важно отметить тот факт, что наследие Низами Гянджеви также характеризуется как показатель мультикультурализма. Например, исследование наследия этого великого мыслителя в Европе довольно актуальная тема. С конца XIX и начала XX века начинается систематическое изучение поэм Низами в Западных странах.

Немецкий композитор Хорст Лозе/Horst Lohse с поэзией Низами знакомится в начале шестидесятых годов. Об этом он пишет следующее: «Как композитор я создаю звуковые образы и рассказываю истории в тонах. Это язык, на котором я могу выразить себя. Язык, взволновавший меня в раннем возрасте и даже поразивший мое сердце, – это язык повествования поэта Низами, который мне известен только в немецких переводах. Но и сквозь эту вуаль я чувствую ясную и чрезмерную силу его поэзии. Его рассказы были подобны пейзажам, по которым я бродил мысленно. И то, что я читал, пробуждал во мне внутренние звуки. Мир Низами стал для меня небом, в котором мои мысли могли парить и летать свободно, как птица». Чудесные истории из «Семи красавиц» окрыляют его музыкальную фантазию на создание «Эпитафии Низами. Прелюдия для большого оркестра». Премьера 18-минутного произведения прошла 26.11.1979 г. в Земельном театре баварского города Кобург.

Во время работы над «Эпитафией» у Лозе созрел план по созданию музыкального цикла «Семи красавиц». К 1980 году он сочиняет музыку к рассказу хорезмской принцессы в бирюзовом павильоне под названием «Махан». «Махан» – это получасовой балет в четырёх актах для фортепиано в 4 руки ударных, премьера которой состоится лишь 27 лет спустя, 10.10.2007 г. в Нюрнберге. В 1981 году он создаёт вторую оркестровую версию балета для камерного оркестра. Через год Лозе пишет расширенную третью версию для большого оркестра, которая в 1984 году будет удостоена Второй премии балетного конкурса им. Карл Марии фон Вебера в Дрездене. 01.07.2005 г. на Музыкальном фестивале «Встреча Вос-тока с Западом» г. Бамберг с большим успехом прошла премьера часового мультимедийного танцевального перформанса «Махан» в редакции знаменитого румынского пианиста, лауреата международных конкурсов Зорина Петреску (Sorin Petrescu). Это был уникальный симбиоз современной музыки Хорста Лозе – в сопровождении румынского ансамбля «trio contraste», танца – в исполнении семи солистов оперной балетной труппы. Тимишуара,

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видеоинсталляции и поэзии Низами. В 2013 году ансамбль «trio contraste» под управлением Зорина Петреску выпустил компактный диск «Махан».

Герхард Мюллер-Хорнбах/Gerhard Müller-Hornbach – немецкий композитор, дирижёр и музыковед. Профессор композиции и теории музыки Франкфуртского Университета музыки и исполнительских искусств и Музыкальной академии г. Кронберг. В 1982 году Мюллер-Хорнбах основывает ансамбль «Mutare». В том же году он пишет пять романсов «Ширин» для сопрано и гитары на основе перевода Бюргеля «Хосров и Ширин».

Детлеф Гланерт/Detlev Glanert – немецкий композитор из Гамбурга. Известен своими операми для детей, среди которых на первом месте стоит опера «Лейла и Меджнун». Премьера 60-минутной оперы состоялась на Мюнхенской Биненале 28.05.1988 г. 20.05.2017 г. в Ганноверском государственном театре с большим успехом прошла премьера совершенно новой редакции 80-минутной оперы. Как отмечалось в одной рецензии: «Здесь встречаются Запад и Восток: восточные инструменты – уд, лютня и Государственный оркестр Нижней Саксонии; традиционная музыка и оперное пение. В результате получилась история безумной бессмертной любви – история молодых людей, чьи эмоции превышают земные масштабы».

Фриц Райнер/Fritz Rainer – австрийский композитор и джазовый музыкант. Музыкальный руководитель театра «Скала» в Вене и «Австрийского всемирного саммита». 28.01.1999 г. в Венском городском театре „Mödling“ прошла премьера танцевального перформанса „Семь красавиц“ в постановке, композиции и перкуссии Фрица Райнера, а также с участием флейтиста Рональда Бергмара (Ronald Bergmayr), двух танцоров и четырёх актёров. Это было оригинальное отражение языком джазовой музыки и хореографии рассказа индийской принцессы в чёрном павильоне на основе филологического перевода Бюргеля.

Йоахим Йохов/Joachim Johow – композитор из Берлина. В 2007 году он пишет 20-минутную оркестровую сюиту в пяти частях «Лейла и Меджнун». Премьера оркестровой вариации состоялась в римско-католической церкви Святых Бартоломео и Гаэтано г. Болоньи 04.10.2017 г. в исполнении камерного молодёжного оркестра. По рассказу композитора на него оказало большое влияние восточная миниатюра, клезмерская музыка и перевод Гельпке.

До сих пор я представляла композиторов, стимулом для творчества которых были переводы Р. Гельпке и И. К. Бюргеля. Следующие композиторы черпали свои знания из своей культурной среды, но премьера их композиций состоялась в Германии.

Надер Машейки/Nader Mashayekhi – австрийско-иранский композитор и дирижёр из Вены. 13.03.2010 г. на «Восточном фестивале» г. Оснабрюк прошла премьера его оперы «Нэда», названная в честь убитой студентки Neda Agha-Soltan во время акции протеста в Иране 2009 года. В постановке встречаются образы самого Низами, его жены Афаг и героинь из его поэм: Турандот, Нушаба и Фитнэ. Через десять лет состоялась новая редакция оперы «Нэда» (23.04.2017), где были задействованы солисты театра г. Кайзерслаутерн.

Самир Оде-Тамими/Samir Odeh-Tamimi – палестино-израильский композитор из Берлина. 20.08.2010 г. на Бохумском музыкальном фестивале «Ruhrtiennale» прошла премьера его оперы «Лайла и Меджнун». Реакция публики и прессы была очень сдержанной.

Ариф Мирзоев – композитор, органист, ученик Гара Гараева, заслуженный артист Азербайджанской Республики, почётный член «Нового международного музыкального общества им. И. С. Баха» и обладатель памятной серебряной медали «Наследники И. С. Баха». В 2016 году Ариф Мирзоев сочиняет музыку для органа соло «Адажио – памяти Низами», премьера которой состоится через два года в авторском исполнении на вечере органной музыки под названием «Бах и Восток». Концерт с огромным успехом прошёл 01.08.2018 г. в рамках Международного летнего фестиваля органной музыки в Церкви св. Павла г. Дармштадт. Премьера клавирного варианта «Адажио» в исполнении Арифа Мирзоева прозвучала 28.10.2016 г. в Центре мировой музыки г. Хильдесхайм на концерте под названием «Восточно-западный диван», посвящённый 875-летию великого Низами Гянджеви.

Хадиджа Зейналова – профессор Детмольдской консерватории и Университета г. Падерборн. Автор диссертационного исследования о «Музыкальной культуре Азербайджана XX века» (2013), которое на сегодняшний день является первым и единственным серьёзным пособием на немецком языке. 15 июня 2019 г. в г. Детмольд прошла премьера балетной сюиты «Хосров и Ширин» с участием солистов балетной школы им. «Olga Kochanek» и ансамбля «Bridge of Sound», которым уже несколько лет руководит Хадиджа Зейналова.

Conclusion

В заключении данного исследования нужно отметить, что опираясь на многовековую мудрость и моральные ценности нашего народа, наших предков Низами Гянджеви получил с небес божественные тайны. То, что мы сказали выше, является одним из небесных образов. В ясные ночи иногда светит луна. Белый свет создает

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божественную красоту вокруг луны и делится на яркие цвета [1, с. 42-44].

Сокровище мудрости Низами можно открыть только на основе языкового материала его народа - азербайджанских тюрков. Ключ к сокровищам - азербайджанский фольклор [3, с. 4]

Низами Гянджеви, считавший терпение ключом ко всем трудностям, знал, что те, кто попал в беду, могут получить от этого важный жизненный урок. Он тот, кто развязывает все узлы:

Сказал он: будь терпелив, работой возвышайся,

Ни кто еще в беде вечно не оставался.

У Низами Гянджеви даже прораствание семян становится очередной мудростью:

Даже семя прорастет после благословления,

Поверь, ни одно дело не откроется без сомнения! [29, с. 49-51].

В заключении важно отметить, что на основе разных исторических, а также письменных научных источников, кроме того отдельных архивных документов изучение многовековых духовных ценностей в богатом наследии великого Низами Гянджеви как показателей народной мудрости Азербайджанского народа является довольно важным научным направлением. Поэтому в таких академических трудах как данная статья должны исследоваться исключительное источниковедческое значение примеров религиозных традиций, как составной части национально-духовных ценностей нашего народа, содержащихся в творчестве шейха Низами, на основе многочисленных художественно-литературных примеров. Кроме вышеуказанных в данном научном труде также исследуется значение произведений, а также научно-литературного наследия Низами Гянджеви как источников в изучении среды эпохи Ренессанса, а также в исследовании мультикультурных ценностей нашего народа, традиций сосуществования, на основе приводимых примеров из произведений великий мыслителя из Гянджи.

Как известно, на основе стихов Низами в разное время, начиная с середины XX века, в Азербайджане были созданы оперные и балетные спектакли, симфонические поэмы, песни и романсы таких композиторов, как Узеир Гаджибейли, Фикрет Амиров, Джахангир Джахангиров и другие, оперы Ниязи и Афрасияба Бадалбейли, драмы Самеда Вургуня «Фархад и Ширин» (1941), «Низами» (1948), балет Гара

Гараева «Семь красавиц» (1952) и другие произведения. Художники Федор Гусак, Александр Филиппов, Кязим Кязимзаде, Тогрул Нариманбеков, работавшие в бакинских театрах над сценическим решением этих произведений, внимательно изучали эпоху Низами и смогли передать в своих эскизах азербайджанский интерьер и культуру одежды XII века. Некоторые из таких эскизов хранятся сегодня в фонде театрального музея.

Также хотелось бы отметить, что академик Гамид Араслы - великий ученый, литературовед и востоковед родом из города Гянджи, был первым, кто провел исследование творчества Низами Гянджеви в Азербайджане, популяризировал его творчество и доказал тюркское происхождение великого поэта. Он описал Низами как первого мастера ближневосточной литературы, который выступал против войн, призывал людей жить в мире и создавал положительные образы женщин. Сфера исследований Гаида Араслы очень широка. Творчество Низами Гянджеви всегда находилось в центре его внимания. Научно-исследовательские работы «Жизнь поэта», «Дружба и героизм в творчестве Низами», «Низами и Родина», «Низами Гянджеви» являются результатом творческой мысли академика Гаида Араслы. Великий ученый определил наличие в «Хамсе» около сотни тюркских слов и азербайджанских пословиц, тем самым положив конец сомнениям о тюркском происхождении Низами.

Наряду с богатыми библиотеками, медресе, научной и культурной средой Гянджи, считающейся одним из важных научных и культурных центров эпохи Возрождения (Ренессанса), в статье такие важные духовные ценности как национальная память, моральные ценности, историческое и этнографическое наследие нашего народа, имеющие традиции с тысячеклетним прошлым, традиции толерантности изучаются как значимые показатели всемирного масштаба наследия Низами Гянджеви с историко-этнографической точки зрения. Важно отметить, что на основе научного исследования обращения к национальной памяти, историческим корням и религиозным ценностям нашего народа, великого поэта, неоднократно констатировавшего в своих произведениях национальную идентичность и наследие славных предков, ярко демонстрируются неоспоримые показатели Восточной мудрости, гуманности, преданности общечеловеческим ценностям.

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IMPACT OF ECONOMIC REFORM ON SPIRITUAL AND MORAL PERSONALITY

Abstract: The article is devoted to the formation of the spiritual and morality of the individual and the impact of economic reforms. The relationship between the economy and human spirituality is revealed. The nature of spirituality and morality is substantiated as a social phenomenon that contributes to their understanding at the present stage of the development of society from the standpoint of existential-value relations.

Key words: economic reforms, the spiritual image of the person, the influence of economic reforms on the spiritual image of the personality, a change in the conviction of the personality, a change in personality traits, a change in the life position of the personality, the primacy of material values and needs over the spiritual, the commercialization of consciousness and personality behavior, change life values and needs of the individual.

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Introduction

In the spiritual content of a person, the most important role is played by spiritual and moral values, expressed in the nature of moral consciousness and social practice of people, in their views and actions.

Spiritual and moral values cannot exist both without an object (object) and without a person (subject). This is quite obvious, because the interest in spirituality, spiritual and moral values every time in the history of social development is generated by new social relations in which a person finds himself as a person and in which his life activity takes place. Each historical epoch in the development of society is organically connected with every person, his views, attitude, deeds and actions are directly connected with it. In such an environment, a person is both an object and a subject of social relations. consequent, spiritual, moral and other values exist, since there is a subject-object relationship as a reality, through this relationship.[1]

Spiritual, moral and other values manifest themselves, are found only in the process of human activity in the development of the world, through evaluation. In this sense, spiritual and moral, as well

as other social values, are inseparable from activity, with an assessment, either actual or potentially present in the possibility of activity.

Bu manba matni haqida batafsil Qo‘shimcha axborot olish uchun manba matnini kiriting.

Materials and methods

The past first decade of the 21st century has shown that the Western civilized world is shaken not only by economic crises, we can safely say that along with them, the crisis of spiritual and moral values is deepening. But, if economic crises are quite obvious for all people, then the crisis phenomena of the spiritual and moral state of society are for the most part not recognized by people, and this is their greatest danger. Human production activity, along with economic, also has a spiritual side.[2]

Socio-economic progress, political and cultural-spiritual conditions must reach such a stage that a person would have a real opportunity for free choice and that it would continuously grow. This presupposes not only general economic development, the enrichment of the social class structure of society, the strengthening of the middle class, the formation of a

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true multi-party system, but also the emergence of real economic and political competition, the adaptation of people's volitional qualities to it, the spiritual development of members of society, the growth of their political culture and social responsibility.

It should be noted that "a society that attaches equal importance to the economy of spirituality creates a fertile ground for stable development, without relatively large social upheavals and confrontations".[3]

Since the 1990s, our country has been living in conditions of continuous radical economic reforms. Economic and political reforms, a spiritual crisis and a reassessment of values, a change in worldview paradigms, and often the establishment of ideological relativism - this is not a complete list of events that largely determined not only today, but also the prospects for the further development of man and society. In the course of these reforms aimed at building a democratic and civil society based on market relations, many processes and factors interact in Uzbekistan, new institutions, structures, mechanisms and relationships emerge. Implemented on the basis of a well-thought-out program or concept, these reforms made it possible to create market institutions in the country's economy, achieve macroeconomic stability, eliminate the resource-based economy, and accelerate the development of the national economy.

Today, economic reforms in our country have entered a new phase. At this juncture, "further strengthening macroeconomic stability and sustaining strong economic growth ... is our overriding challenge." [4]

The main criteria for achieving macroeconomic stability are:

- 1) non-reduction of production volumes;
- 2) creation of favorable conditions and use of internal reserves at enterprises of priority sectors;
- 3) ensuring the state budget and financial stability of enterprises;
- 4) curbing inflation and strengthening the national currency;
- 5) improvement of the balance of payments and state foreign exchange reserves;
- 6) stabilization of the social situation, raising the standard of living. [5]

Each of these criteria, of course, radically changes the real situation in the economy. At the same time, it must be recognized that thirty years of economic reforms, their directions, factors, resulting phenomena and mechanisms significantly affect the spiritual image of the individual. But this effect, its result, cannot be characterized in purely positive or negative terms. These changes are more complex.

For example, under the influence of economic processes, in one case, some qualities of a person became more developed, in another, a number of shortcomings began to appear in him. The same can

be said about the impact of economic reforms on a person's beliefs and life situation. In our opinion, the impact of economic reforms on the spiritual image of a person is expressed in the following:

1. As a result of the reforms, human convictions acquired a special character. It is well known that faith refers to the knowledge that a person lives in his mind for a second life "rediscovered" by him in proportion to his interests, which is applied in human activities. Faith has its own components of intelligence, evaluation and activity. The economic reforms being carried out in our country have gradually radically changed all these components of human faith.

In particular, the following components of a person's faith have undergone a renewal process:

a) knowledge, ideas, theories (or mental component) of society, social development, social progress, economic processes; While in the Soviet years this knowledge of the individual was based on the ideology of communism and the theory of political economy, economic reforms greatly expanded the scope of this knowledge through various economic theories and practices;

b) the attitude of a person to the knowledge of economic processes (or the estimated component); The reforms carried out in our country have radically changed the attitude of people towards a centrally planned economy, the economic policy of the Soviet government, the principles of management, the nature of the relationship between economics and politics;

c) knowledge-based forms of social activity (or component activity); Economic knowledge of a new nature has transformed the economic activity of the individual in a new way. This is the development of such activities as small business, family business, home work.

2. Economic reforms have affected personality traits and characteristics. During the years of Soviet power, such vices as indifference, indifference and irresponsibility were deeply rooted in the spiritual image of the individual. Indeed, such a desire was natural for an economy based on the principles of equality, which required central planning of even the most insignificant internal issues, did not approve of this initiative. The emergence of a market infrastructure in our country, the introduction of the principles of a market economy, especially the privatization of state property, has radically changed the situation. In particular, a property structure began to take shape in the social structure, small businesses and private entrepreneurship emerged, and the proportion of people working in the non-state sector increased.

Work in the non-state sector has its own characteristics: one cannot turn a blind eye to selfishness, dependence, lack of initiative and irresponsibility. Because the main goal of the industry is to make a profit. Any selfishness, dependence, lack of initiative, irresponsibility will lead to a decrease in

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the income of these subjects, and ultimately to its decline. For the same reason, the emergence of the non-state sector, the increase in the number of people working in it, in the short term, became the root of the above-mentioned shortcomings. Thus, economic reforms have led to positive changes in the spiritual image of the individual. Economic reforms have led to a change in the life position of the individual. Life position is a combination of social, civic duty and moral responsibility. This, according to experts, is a person's attitude to the world, which is reflected in his efforts and actions. [6] This concept also includes efforts to satisfy their social and personal interests, improve social and personal living conditions in accordance with humane ideals. If a person deeply understands his social duties and makes them his beliefs, the norm of his activity, his life position is considered active. A person acting on the basis of such a position serves to increase the material and spiritual wealth of his country, to ensure the well-being of the country.

The impact of economic reforms on a person's position in life manifests itself in different ways. In particular, first of all, thanks to the reforms, the social system and way of life in society acquired a new character. This, in turn, affected the life position of a person. Secondly, economic reforms have changed the social environment (labor community, public organizations, family, etc.) that directly surrounds a person. These changes left their mark on the spiritual image of a person, on the position that he took in life.

Thirdly, the renewal of the nature of the needs and interests of the individual in the course of the reforms also affected the position of the individual in life. However, as we have already noted, economic processes did not have a positive impact on the spiritual image of the individual. As a result, there are a number of negative consequences. Therefore, when analyzing the problems of relationships in the context of "society-man", "economic processes-spiritual image of man", it is necessary to discard passion and euphoria and mention the negative products of these processes.[7]

First of all, it should be noted that the reforms carried out in our country have focused on material values and needs. This priority forms a completely new model of the spiritual image of modern man. For example, economic reforms have made self-interest a priority in making decisions about a society based on a market economy, including the development of individual initiative and entrepreneurship. Because without self-interest, there can be no question of initiative and entrepreneurship. The primacy of personal interests subordinated the spiritual image of the individual to the principles of individualism. Today, man is becoming a pure individualist: he seeks to separate himself from others, to distance himself from them, to worship nothing but the market, where the spirit of consumerism and the

principles of hedonism breathe. The idea of Antoine de Saint-Exupery "There is only one problem in this world - to give people spiritual content and spiritual concerns" is becoming more and more relevant.[8]

The progress of mankind in technological and spiritual terms changes in time the views and motives of the behavior of peoples and states, taking into account their position in the world of social interaction. Society and social groups need to generalize ideas in meeting the needs and in using universal values, overcoming the aggravation of contradictions and unfounded claims in the processes of economic activity. Under the influence of economic processes, the consciousness and activity of the individual are commercialized, that is, they are subject to material interests. It is known that commercialization is understood as the activity of an individual or organization aimed at generating income, profit in any way. In economic terms, this process is not negative.[9] However, the absolute commercialization of human consciousness and activity can lead to tragic consequences. Unfortunately, the number of people who build their activities and lifestyle on the basis of this principle is growing every year.

Economic reforms also change the values and ideals of a person. Abu Raykhan Beruni, who today called a whole century to a large group of people, Khabib Abdullayev, known for his stamina, and Musa Tashmuhammad oglu Oybek, who dared to praise the great people of his people even in the colonial years, did not leave a mark in Asadbek's singing "Artist" becomes an ideal. Thus, the ongoing economic reforms in our country have made it possible to achieve significant results, but at the same time have had a significant impact on the spiritual image of the individual.[10]

In particular, under the influence of economic reforms, beliefs, qualities and attributes of a person, a life position acquired a new character. At the same time, shortcomings were identified in the spiritual image of the individual during the reforms, and a thorough study of these processes will help determine the laws of society's influence on the individual.

Conclusion

Thus, economic and political reforms, a spiritual crisis and a reassessment of values, a change in worldview paradigms, and often the establishment of ideological relativism - this is a far from complete list of events that largely determined not only today, but also the prospects for the further development of man and society. Both the external conditions for the formation of public consciousness in general and moral consciousness in particular, as well as internal factors, have radically changed, which attracted increased attention from the research community, public organizations and various government structures.

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SPIRITUAL VALUES ARE A FACTOR OF SOCIAL STABILITY

Abstract: *The article analyzes the interpretation of the events of spiritual life in the context of globalization, the analysis of the manipulation of human consciousness and thinking by various ideological means, the author scientifically shows that spiritual values are an important factor in social stability.*

Key words: spirituality, society, education, values, traditions, threat, stability.

Language: English

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Introduction

Exerting a significant impact on the spiritual state of society, spirituality and morality find their expression in the methods and purposes of spiritual activity in society, in the nature of meeting the needs of society, in the holistic manifestation of the outlook of social life. They, spreading, are affirmed through social institutions, in the spiritual sphere of the life of society.

Materials and methods

Particularly relevant is the issue of preserving and modern perception of spiritual and moral traditions, their influence on the value orientations of the individual in the context of a paradigm shift in the worldview. The events taking place in the spiritual, moral and sociocultural space of society allow us to say that at the moment in society there is a very noticeable underestimation of spiritual and moral traditional values, which have long been an integral part of the life and development of the nation.. National spirituality is, first of all, a historical event.

The origins of the history of the peoples of Central Asia go back centuries, and today it is difficult to determine whether they have passed millennia of spiritual maturity. But there are important differences between the history of national spirituality and the history of political, social and even cultural life. First of all, the history of national spirituality is associated with the process of spiritual development of the nation.

National spirituality arises in the period of maturity, that is, throughout the entire history of the nation, but sometimes it can increase over time, and sometimes decrease to some extent. One thing is for sure, historical events, personalities, events will pass.

The elements of material culture are destroyed: spirituality rises, enriches, becomes wider and deeper. Even in tragic conditions, in which most of the nation is in a state of spiritual decline, national spirituality does not disappear and does not lose the stage of maturity that it has reached in its scale and content.

Spirituality is the essence of a person as a sociocultural being, that is, human kindness, justice, righteousness, decency, conscience, honor, patriotism, beauty, love, pleasure, hatred of evil, will, perseverance, and so on, unity is a complex of common features.

Spirituality is one of the main criteria for the development of society, the improvement of the nation and the improvement of the individual, because in a society where spirituality develops, there is economic and socio-political stability and development of the country and the nation.

According to Pakhrutdinov Sh. "One of the main factors in the emergence of threats to state stability is the spiritual poverty of the people, the irresponsible

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attitude of the authorities to society, ignoring the existing radical, nationalist, fascist manifestations."¹.

Continuing his opinions, the author notes that "therefore, if such priorities prevail in society, then an increase in external and internal threats is inevitable. And these factors not only negatively affect the stable state of society, but also make its development problematic. " Proceeding, it should be noted, the essence and practical significance of spirituality are the characteristics of society².

Proceeding, it should be noted, the essence and practical significance of spirituality are the characteristics of society.

In a country that does not pay attention to spirituality, there will be a great economic, social and political crisis. The root of all crises in the life of society lies in the level and state of spiritual maturity of people. A country where people are spiritually disadvantaged

The truth of these ideas lies in the fact that it is important for humanity to know not only the ultimate goals of the development of society, but also specific and effective ways to achieve them. It also depends on how deeply and objectively we know the internal laws of social development. The laws of spiritual development are an integral part of the necessary internal connections in the life of society. The material life of society is the spiritual maturity of a person with progress. In this case, it is useless to ask which one is primary and which is secondary. Spirituality reflects material life. And he is thrown into the fall as a set of spiritual phenomena that exist in society.

The causal relationship between them is two-sided, not finding one-sidedness. Spiritual life itself is confirmed at every stage of the path by the material causes that it causes. That is why today the developed countries of the world attach great importance to the issue of the spiritual maturity of the members of the Commonwealth of Independent States, who have embarked on the path of independent development. This is not a temporary policy of some states, but a key path of world development. All healthy people in society have the ability to think. This is the main subjective quality that demonstrates the broad practical capabilities of a person in front of all other creatures in nature.

No form of conscious activity meets the criteria of spirituality. An extremely spiritually degraded person also consciously controls his behavior. Spirituality is a manifestation of the positive meaning of human consciousness. In this sense, spirituality is one of the most important aspects of society. This is

the development of independent aspects of spirituality with the emergence of humanity and its connection with its ordinary life, which accelerated and deepened more and more.

The spiritual life of a society is the subjective basis of a person's productive activity and interaction; in fact, a person's social life is a certain way of life.

Factors and means of strengthening spirituality can take different forms and manifestations. It should be noted that, "One of the factors ensuring the preservation of independence is interethnic relations and their improvement. Interethnic relations have always played an important role in the history of the state and the region "³.

The correct organization of interethnic relations and a reasonable policy pursued in the process of organizing these relations are of great importance. In the history of mankind, the aggressor countries have paid great attention to inciting national conflicts to achieve their goals and interests, and skillfully used these conflicts.

Results

Uzbekistan is a multinational historical state, and the forces that have not seen the independence of Uzbekistan are trying to provoke disagreements and conflicts between people of different nationalities. The states striving for hegemony use their political, strategic, geopolitical, economic means to destroy the economic, political and spiritual stability of other states. According to the theory of hegemonic stability, if the position of the hegemon in the international arena begins to weaken, then the world economic system ceases to be as open as before and acquires a conflict character.

The desire for hegemony inevitably entails the desire to make all one's surroundings homogeneous and similar to oneself, to destroy the material for comparisons, the potential threat of exposure, to subjugate other countries.

Hence - the constantly acting installation to penetrate into all areas of space, where there is at least the slightest opportunity to penetrate. Ideology justifies this as the most humane and progressive activity of the country to free mankind, for example, from colonialism or dictatorship. The desire to dominate the political and economic spheres inevitably leads to the desire to dominate the spiritual.

Unfortunately, the general state of affairs with the anticipation of global challenges and threats in the context of international relations leaves much to be desired. None of the eight targets set for 2015 in the

¹ Ш.И. Пахрутдинов «Опыт Узбекистана по предотвращению угроз: факторы и критерии создания устойчивого общества» //Вопросы политологии. – 2017. – №. 2 (26). – С. 90

² Ш.И. Пахрутдинов «Опыт Узбекистана по предотвращению угроз: факторы и критерии создания устойчивого общества» //Вопросы политологии. – 2017. – №. 2 (26). – С. 90

³ Пахрутдинов Ш. И. Угрозоустойчивое общество в качестве фактора развития государства и общества //Конфликтология. – 2016. – №. 4. – С. 67-83.

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ambitious Millennium Development Goals program adopted at the Millennium Summit has been achieved.

The reason for this lies, first of all, in the reluctance of the world political elite to recognize the qualitatively new nature of the threats of the 21st century.⁴

Conclusion

Thus, in the process of spiritual maturity, a person's character is formed. Not only knowledge and

science, but also the ability to apply the achievements of science and experience in practice is spirituality. The legal culture of human maturity, knowledge of a sense of duty and responsibility is formed and developed through trials in the process of everyday diversity, which leads to the strengthening of such spiritual qualities as honesty, faith, conscience.

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⁴ Пряхин В. Ф. Рецензия на статью ШИ Пахрутдинова «Опыт Узбекистана по предотвращению угроз: факторы и критерии

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STUDY OF OLIGOMER-ANTIPYRINE SYNTHESIS AND PROPERTIES OF NITROGEN, PHOSPHORUS AND ZINC STORAGE

Abstract: The article studied the composition and structure of oligomer synthesis based on urea and phosphoric acid and zinc oxide, as well as the composition and structure of nitrogen and phosphorus oligomers synthesized using IR spectroscopic analysis to determine chemical bonds and functional groups.

Key words: zinc oxide, urea, orthophosphate acid, oligomer, viscosity.

Language: English

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Introduction

One of the most important and fundamental problems in the chemistry of high molecular weight compounds is the synthesis of polymers and the production of materials based on them that retain their operational properties for a long time under high and very low temperatures, various chemicals, high radiation levels and other factors. The main directions in the development of technology are aimed at obtaining multifunctional polymers containing nitrogen and phosphorus to increase the efficiency of construction and industrial composites. This work is devoted to the production of nitrogen- and phosphorus oligomers with effective corrosion inhibitors and flammable properties. Therefore, one of the urgent tasks today is the production of new oligomeric materials with high-temperature resistance and fire resistance, anti-corrosion, polymer stabilization, environmentally safe and economical. In [1-4], oligomeric antioxidants and corrosion inhibitors were obtained and proposed as multifunctional N -, S -, P inhibitors, on the basis of which more than a dozen new products were synthesized: polymethylene (thio) amidophosphates, oligomeric derivatives of gossypol,

synthesized on the basis of epichlorohydrin di (thio) amidophosphate oligomers, and oligomers of dimethyl terephthalate formed with polyethene polyamine were synthesized. Oligomer refractory NB-6 [5-7] based on urea, phosphorus compounds and metal oxides also has advantages in increasing the fire resistance of wooden structures and polymeric materials. Phosphorus, nitrogen, boron, and metal-containing oligomers of grade 17a were synthesized [8] and applied to wood materials as flame retardants, and the refractory efficiency of the synthesized oligomer was determined. Nitrogen- and phosphorus thiocol oligomers based on sulfur, sodium tetrasulfide, and ammonium polyphosphate have been synthesized for use as fillers for polyethene [9 - 10].

Research methods.

Infrared spectroscopy (IR). The IR spectra of the first and synthesized compounds were obtained on UR-20 and UR-75 spectrophotometers. Samples in powder form were obtained by adding potassium bromide.

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Experimental part.

As a result of the interaction of nitrogen-, phosphorus-, zinc-containing compounds, new multifunctional oligomeric antipyretic antiseptics were synthesized. In the synthesis of these substances, solutions of zinc oxide in phosphate acid were first prepared. 1,3,5% solutions were prepared. Then we put a 5% solution in a 200 ml flask equipped with a stirrer, a reverse cooler and a thermometer. when the mole ratio was 5.5: 1 mol, the reaction lasted 3 hours and a white viscous mass was formed as a result of the reaction.

2- experiment

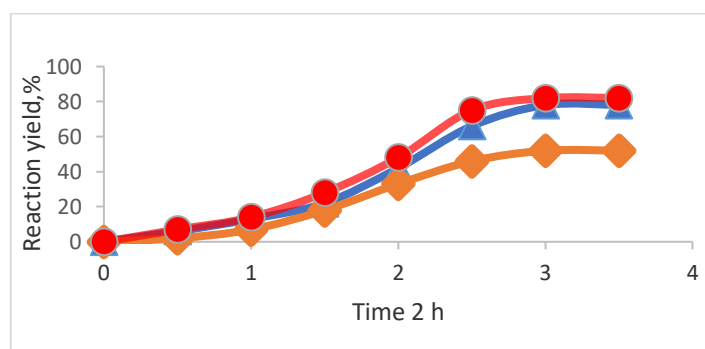
A 34% solution of zinc oxide in phosphate acid was prepared. The solution was prepared at a temperature of 100 °C. In the first experiment, urea was added to the solution formed using the equipment shown. The mole ratio of zinc oxide and urea was 1: 2. The reaction lasted 45 min. As a result, a yellowish viscous mass was formed and a brown liquid remained at the bottom of the vessel. When we took the liquid

in a separate container, it solidified to a yellowish colour.

Experiment 3 As in the above experiment, a solution of zinc oxide in phosphoric acid was prepared in a vessel and urea was added to it. In this process, the molar ratio of zinc oxide and urea was 1: 1. mass was formed.

A number of synthesis processes were carried out in different conditions and environments, and the ratio of time, temperature and starting materials to the yield of mainly synthesized oligomeric flame retardant antiseptics as well as the effect of catalyst species were studied. Based on the above, the optimal conditions for obtaining synthetic antipyretic antiseptics were found.

Figure 1 below analyzes the reactions of oligomers containing nitrogen, phosphorus, and zinc in different proportions. Accordingly, the ratio of orthophosphoric acid: urea: zinc oxides was 5.5: 1: 2.6 the temperature was 100 °C and the duration of the process was 3 hours.



(Fig. 1) Time dependence of reaction yield

Figure 1 shows that these reaction processes are temperature-dependent, and the reaction products at different temperatures in the ratio of 5.5: 1: 2.6, which achieved the highest yield among all ratios, were studied. These reaction processes obtained the best results at 90-100oS.

When studying IR spectroscopic analysis of organic oligomer compounds obtained in three different ratios (5.5: 1: 2.6 and 2.06: 1: 1.9) consisting of the same synthesized components, it can be seen that the main absorption lines are close to each other.

Result and its discussion

In IR spectroscopy analyses, the -SN2- groups have wavelengths in the 2889–2850 cm⁻¹ domains and absorption lines in the 1633–1600 cm⁻¹ domains, confirming close absorption in Figures 2 and 3. However, although the presence of -SN2- groups in

the IR spectra shown in both images has been identified, the absorption areas can be clearly seen in Figure 2, where the phosphate acid content is high.

In the IR spectrum (Figures 2 and 3-4), the absorption lines were typically found to have almost identical absorption lines in both images at the 3186 cm⁻¹ range (-NH-SO-group). At the same time, in the range of 476 cm⁻¹, there are absorption lines characterizing the Me-O-groups, and in the range of 889-1070 cm⁻¹, the presence of phosphorus groups (P = O) and (-P - O - C) is widespread. can be seen in an intensive state.

Physicochemical properties of the obtained organic oligomer flame retardants.

The physical properties of the obtained substance were determined and shown in Table 2.

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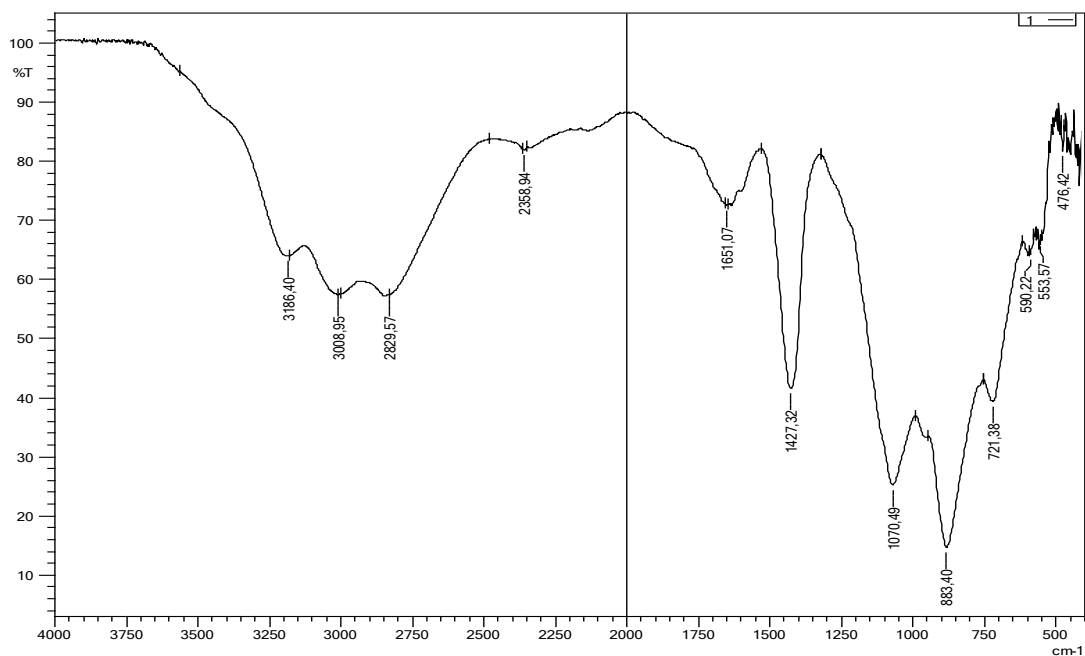


Figure 2.

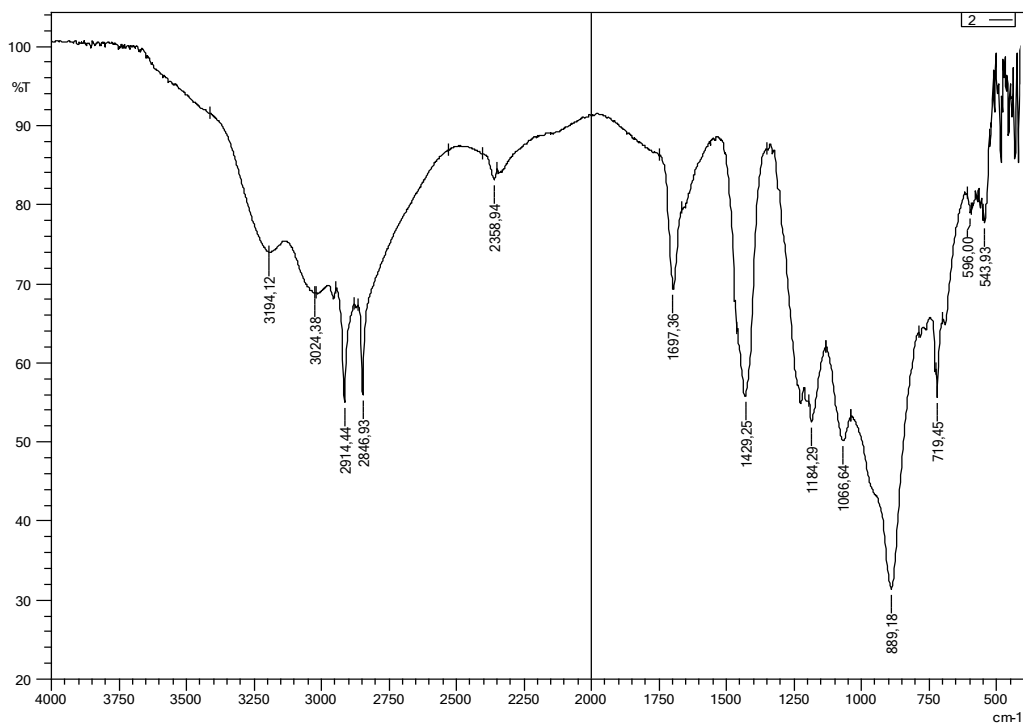


Figure 3.

Figure 2-3 IR spectroscopic analysis of organic oligomeric compounds containing nitrogen, phosphorus and zinc synthesized on the basis of phosphoric acid.

Table-1. Physical properties of the obtained substance

The name of oligomer	Raw materials	Relative (mol)	quantity, %	Aggregate condition	pH	Density, g / cm ³
Contains nitrogen, phosphorus, zinc-containing substances	orthophosphoric acid: zinc oxide: urea	5.5:1:2.6	75	White viscous substance	7,5	1,2
		2,06 : 1 : 1,9	65		7,2	1,1
		1,63: 1:1	80		7,5	1,3

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Depending on the results obtained, it was found that there was a slight change in the physical properties of the substances as the mole ratios of the substances changed.

Orthophosphoric acid: zinc oxide: measuring the viscosity of aqueous solutions of oligomeric compounds obtained in different proportions of urea

The viscosity of the resulting oligomer antipyrine was determined on a VPJ-1 viscometer. Viscometer diameter 0.55 mm.

Table2. Measuring the readability of the obtained substance

№	Ratio of substances.	Solution concentration%	Transition time of the solution (min)	$\eta_{\text{отн}}$	$\eta_{\text{уд}}$	$\eta_{\text{ип}}$	$\eta_{\text{пор}}$	η_{xb}
1		0 (Solvent)	4.89					
2	5.48:1:2.6	1	5.11	1.045	0.045	0.3	0.94	0,8
		0,5	5.6	1.145	0.145	0.58	0.52	
		0,25	7.6	1.55	0.55	1.1	1.13	
3	2,06 : 1: 1,9	1	5.4	1.1	0.1	0.4	1.23	1,3
		0,5	5.9	1.2	0.2	0.8	1.57	
		0,25	5,2	1,1	0,15	0,75	1,53	

Based on the readability of the obtained substance, it can be concluded that it has oligomeric properties.

Conclusion.

The study of nitrogen, phosphorus and zinc-containing organic compounds in world practice

opens up possibilities. As a result of the interaction of nitrogen, phosphorus, zinc-containing compounds, new multifunctional oligomeric antipyretic antiseptics were synthesized and their physicochemical properties were studied.

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According to the results of research work of the past 2021 and published scientific articles in the journal «Theoretical & Applied Science», Presidium of International Academy of Theoretical & Applied Sciences has decided to award the following scientists - rank Corresponding member and Academician of International Academy, as well as give diplomas and certificates of member of International Academy.



Presidium of International Academy
congratulating applicants with award of a rank of
Corresponding member of International Academy TAS (USA)

Scopus ASCC: 2000. Economics, Econometrics and Finance.			
1	Prokhorov, Vladimir Timofeevich	Institute of Service and Entrepreneurship (branch) DSTU Shakhty, Russia	Doctor of Technical Sciences, Professor
2	Volkova, Galina Yurievna	LLC TsPOSN «Ortomoda» Moscow, Russia	Doctor of Economics, Professor
3	Blagorodov, Arthur Aleksandrovich	Institute of Service and Entrepreneurship (branch) DSTU	

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4	Bordukh, Olegovich	Dmitry	Institute of Service and Entrepreneurship (branch) DSTU	
5	Shcherbakov, Sergeevich	Danil	Institute of Service and Entrepreneurship (branch) DSTU	
Scopus ASCC: 1600. Chemistry.				
6	Yurchenko, Ivanovych	Oleg	Kharkiv V.N. Karazin National University	PhD, Full Professor of Chemical Metrology Department
7	Chernozhuk, Tetyana Vasylivna		Kharkiv V.N. Karazin National University	PhD, Associate Professor of Inorganic Chemistry Department
8	Kravchenko, Andriovych	Oleksii	Kharkiv V.N. Karazin National University	PhD, Associate Professor of Chemical Metrology Department

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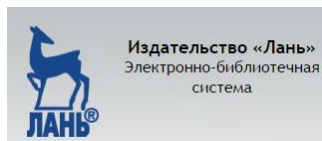
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