

SOI: 1.1/TAS

DOI: 10.15863/TAS

Scopus ASJC: 1000

ISSN 2308-4944 (print)

ISSN 2409-0085 (online)

№ 11 (103) 2021

Teoretičeskaâ i prikladnaâ nauka

Theoretical & Applied Science



Philadelphia, USA

**Teoretičkaâ i prikladnaâ
nauka**

**Theoretical & Applied
Science**

11 (103)

2021

International Scientific Journal

Theoretical & Applied Science

Founder: **International Academy of Theoretical & Applied Sciences**

Published since 2013 year. Issued Monthly.

International scientific journal «Theoretical & Applied Science», registered in France, and indexed more than 45 international scientific bases.

Editorial office: <http://T-Science.org> Phone: +777727-606-81

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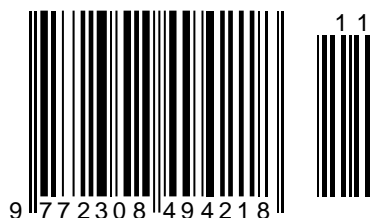
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ISJ Theoretical & Applied Science, 11 (103), 1218.
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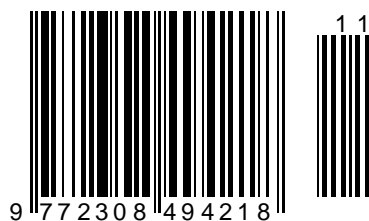
Impact Factor ICV = 6.630

Impact Factor ISI = 0.829
based on International Citation Report (ICR)

The percentage of rejected articles:



ISSN 2308-4944



9 772308 494218

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 10.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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DYNAMIC ANALYSIS OF THE MACHINE UNIT IN THE DRIVE OF A TRANSMISSION REDUCER WALTZ MACHINE WITH A COMPOSITE, FLEXIBLE ELEMENT GEAR

Abstract: Objective. The article describes the kinematic scheme and principle of operation of the Waltz machine, which adjusts the height of the shock absorbers. The magnitude of the solution of the problem of the dynamics of the machine unit with a gear element with a gear element with a flexible element in the two-speed reducer in the machine is given. The laws of motion of gears, the working drum, and the electric drive rotor are derived. Connection graphs were constructed and, based on their analysis, optimal values of machine unit movements were recommended.

Methods. In the process of research, higher mathematics, theory of machines and mechanisms, theory of oscillations, dynamics of machines, test methods of mechanical engineering and technological machines were used.

Results. The main requirement for these rubber pads is that they are evenly distributed over the surfaces of the pads. For this purpose, rubber drums and tapes are passed through special drums on Waltz machines to the required thickness.

Conclusions: The generalized formula for determining the degree of excitability of flexible gear mechanisms was proposed. At the same time, a method of eliminating redundant connections in flat mechanisms was developed.

Key words: Shock absorber, virginity, composite, flexible element, dissipation, gear wheel, angular velocity, inertia, work efficiency, vibration, regularity, moment of inertia, working drum, reducer.

Language: English

Citation: Djurayev, A. D., Beknazarov, J. Kh., & Ashurov, Kh. Kh. (2021). Dynamic analysis of the machine unit in the drive of a transmission reducer waltz machine with a composite, flexible element gear. *ISJ Theoretical & Applied Science*, 11 (103), 401-409.

Soi: <http://s-o-i.org/1.1/TAS-11-103-35> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.11.103.35>

Scopus ASCC: 2200.

Introduction

Methods. Scheme and principle of operation of the machine “Waltz”, which adjusts the height of the

shock absorbers. It is known that a number of technological machines use special shock-absorbing rubber pads to reduce vibrations, transmission torques

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and vibration amplitudes, ie to dampen [1]. In particular, in the automotive industry, in general, the internal combustion engines of mobile cars are mounted on the body through such pads. They are also mounted on the foundation by means of rubber pads of the required thickness to dampen the vibrations of metal cutting machines and a number of technological machines. The main requirement for these rubber pads is that they are evenly distributed over the surfaces of the pads. For this purpose, rubber drums and tapes are passed through special drums on Waltz machines to the required thickness.

According to the kinematic scheme shown in Figure 1, the Waltz machine works as follows.

Results.

The driving power is 18 KW, n = 1000 rpm, from 1 electric conductor through the coupling 2 to 3

reducers. The gearbox is a two-speed gearbox with a 5-component flexible element via a 4-speed gear. In this case, the 5 wheels are transmitted to the 10 and 11 working drums from 8, 9 internal gear transmission through 6 clutches 7, respectively. The drums are compressed with a rubber band of a specified thickness between 10 and 11, having the desired density, i.e., virginity. The flatter the angular velocities of the drums 10 and 11 in the machine, i.e. the smaller the coefficient of unevenness of the angular velocity, the higher the quality of the output product, i.e., according to [2;3]:

$$\delta = \frac{\omega_{\sigma max} - \omega_{\sigma min}}{\omega_{\sigma p}} \quad (1)$$

Where, are the maximum, minimum, and average angular velocities of drums 10 and 11.

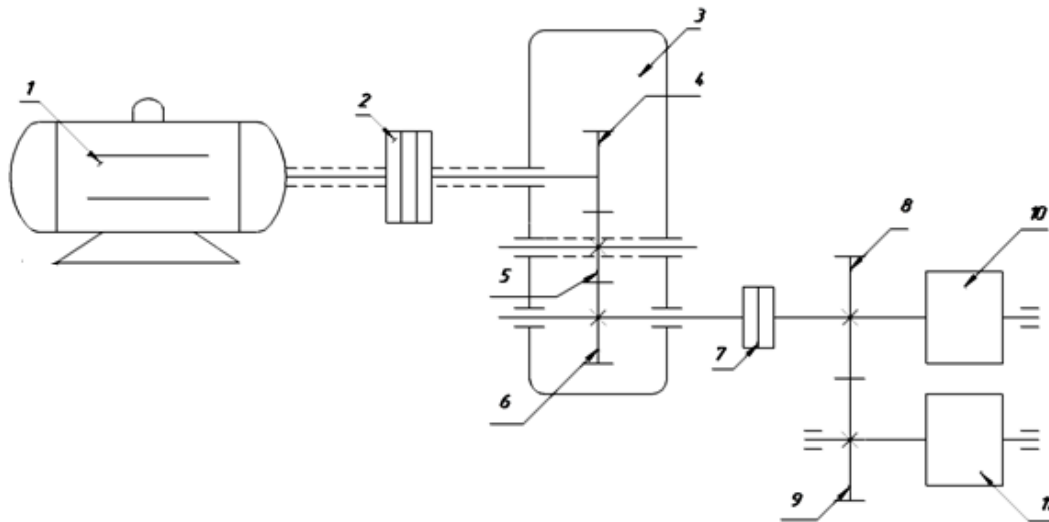


Figure 1. Kinematic scheme of the Waltz machine, which adjusts the height of the shock absorbers.

1 Electric drive, 2, 7 clutches, 3 reducers, 4, 5, 6 gears, 8, 9 external contact gears, 10, 11 working drums.

The main unevenness and noise in machine operation is generated by the reducer transmission. Therefore, it can be ensured by increasing the drum masses to reduce the “ δ ”. However, this will dramatically increase power consumption. Belt and chain extensions could also be used. However, due to the large power transmission, the operating time of these extensions is greatly reduced. Therefore, in order to reduce the torque, velocity oscillations, and noise in the gearbox transmission, we put a flexible element in the middle gear of the two-speed gearbox. By selecting the flexible bushing at the desired height, it is possible to reduce the amplitudes of vibration of speed and torque, as well as noise.

Dynamic and mathematical models of machine units with gears in the drive of the Waltz machine. According to the kinematic scheme of the machine “Waltz” for the production of shock-absorbing tires, we see a dynamic model of the machine unit. This allows you to increase the mass of the flexible elements in the system. The first mass includes the electric rotor and half-clutch mass, the second mass includes the half-clutch drive gear, the third mass includes the composite gear, the drive outgoing gear and the second half-clutch mass, the fourth mass includes the half-clutch, external clutch and working drum masses. Hence, the system consists of a four-mass machine unit.

This model is shown in Figure 2.

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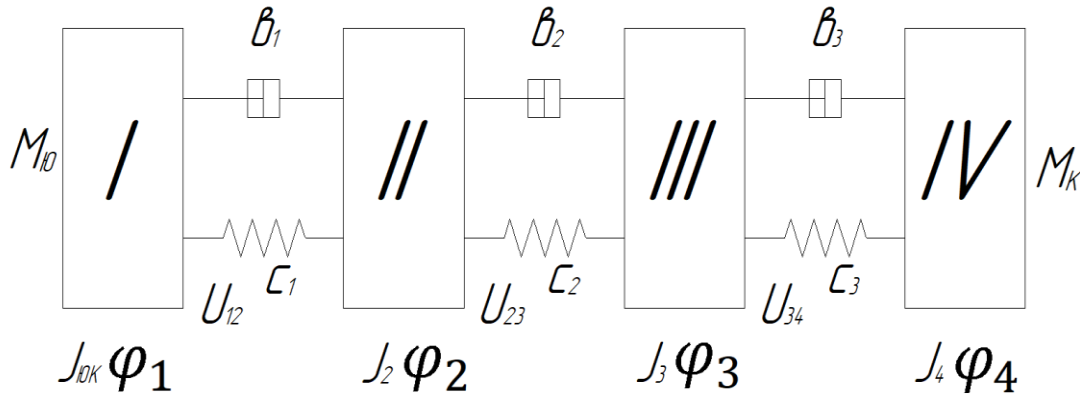


Figure 2. Machine aggregate dynamic model.

According to the research, it is taken into account through the mechanical dynamic characteristics of the electric drive. For a more detailed analysis of the tensile processes in the machine unit under consideration, the mechanical dynamic characteristics of the electric drive were expressed from the system of differential equations proposed by A.E. Levin.

$$\frac{\partial M_{10}}{\partial t} = (\omega_c - P \frac{d\phi_1}{dt}) \psi - \frac{M_{10}}{T_3};$$

$$\frac{\partial \psi}{\partial t} = \frac{2M_K}{T_3} - \frac{\psi}{T_3} - (\omega_c - P \frac{d\phi_1}{dt}) - M_{10}; \quad (2)$$

$$T_3 = (\omega_c \cdot S_k)^{-1}; \quad \psi = \frac{S_k}{S} (M_{10} + T_3 \frac{\partial M_{10}}{\partial t})$$

Where, are the driving moments of the electric drive and its critical value;

Number of R-pairs;

- driver slip and its critical value; - frequency of rotation;

- driver electromagnetic constant time;

- variable.

We determine the equations of motion of the masses of a machine aggregate for each generalized coordinate separately using Lagrangian second-order differential equations [4]:

$$\frac{d}{dt} \left(\frac{\partial T}{\partial \dot{q}} \right) - \frac{\partial T}{\partial q} + \frac{\partial \Pi}{\partial q} + \frac{\partial \Phi}{\partial \dot{q}} = Q(q) \quad (3)$$

Where -generalized displacement and velocity, - time,

K, kinetic and potential energies of P-system, F-Relay dissipation function;

ϕ , $\dot{\phi}$ – generalized coordinate and velocity,

Q (q) - is the total power.

The torsion angles of the four masses of the machine aggregate, and s were taken as the generalized coordinates. In this case, we construct a separate Lagrangian equation for each generalized coordinate. In this case, the kinetic energy of the system:

$$T = \frac{1}{2} \{ (J_p + J_M) \dot{\phi}_1^2 + (J_M + J_{z1}) \dot{\phi}_2^2 + [J_{z2} + U_{z23}^2 (J_{z3} + J_M)] \dot{\phi}_3^2 + (J_n + J_{z4} + J_{z5} + J_{\delta 1} + J_{\delta 2}) \dot{\phi}_4^2 \}$$

System potential energy:

$$\Pi = \frac{1}{2} C_1 (\phi_1 - U_{12} \phi_2)^2 + \frac{1}{2} C_2 (\phi_2 - U_{23} \phi_3)^2 + \frac{1}{2} C_3 (\phi_3 - U_{34} \phi_4)^2$$

The dissipation function of the relay:

$$\Phi = \frac{1}{2} B_1 (\phi_1 - U_{12} \phi_2)^2 + \frac{1}{2} B_2 (\phi_2 - U_{23} \phi_3)^2 + \frac{1}{2} B_3 (\phi_3 - U_{34} \phi_4)^2$$

Where J_p , J_M - are the moments of inertia of the electric drive rotor and the half - clutch;

$J_{z1}, J_{z2}, J_{z3}, J_{z4}, J_{z5}$, - moments of inertia of gears;

U_{12}, U_{23}, U_{34} , - transmission ratios;

$J_{\delta 1}, J_{\delta 2}$ - moments of inertia of working drums;

C_1, C_2, C_3 - coefficients of rotation of flexible elements;

b_1, b_2, b_3 - dissipation coefficients.

The Lagrangian equations define the additions.

Derivatives of kinetic energy:

$$\frac{d}{dt} \left(\frac{\partial T}{\partial \dot{\phi}_1} \right) = (J_p + J_M) \dot{\phi}_1$$

$$\frac{d}{dt} \left(\frac{\partial T}{\partial \dot{\phi}_2} \right) = (J_M + J_{z1}) \dot{\phi}_2$$

$$\frac{d}{dt} \left(\frac{\partial T}{\partial \dot{\phi}_3} \right) = [J_{z2} + U_{z23}^2 (J_{z3} + J_M)] \dot{\phi}_3$$

$$\frac{d}{dt} \left(\frac{\partial T}{\partial \dot{\phi}_4} \right) = (J_{z3} + J_{z4} + J_{z5} + J_{\delta 1} + J_{\delta 2}) \dot{\phi}_4$$

Derivatives of potential energy:

$$\frac{\partial \Pi}{\partial \phi_1} = C_1 (\phi_1 - U_{12} \phi_2);$$

$$\frac{\partial \Pi}{\partial \phi_2} = -U_{12} C_1 (\phi_1 - U_{12} \phi_2) + C_2 (\phi_2 - U_{23} \phi_3);$$

$$\frac{\partial \Pi}{\partial \phi_3} = -U_{23} C_2 (\phi_2 - U_{23} \phi_3) + C_3 (\phi_3 - U_{34} \phi_4);$$

$$\frac{\partial \Pi}{\partial \phi_4} = -U_{34} C_3 (\phi_3 - U_{34} \phi_4).$$

Derivatives from the dissipation function:

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$$\frac{\partial \Phi}{\partial \varphi_1} = b_1(\dot{\varphi}_1 - U_{12}\dot{\varphi}_2);$$

$$\frac{\partial \Phi}{\partial \dot{\varphi}_2} = -U_{12}b_1(\dot{\varphi}_1 - U_{12}\dot{\varphi}_2) + b_2(\dot{\varphi}_2 - U_{23}\dot{\varphi}_3);$$

$$\frac{\partial \Phi}{\partial \dot{\varphi}_3} = -U_{23}b_2(\dot{\varphi}_2 - U_{23}\dot{\varphi}_3) + b_3(\dot{\varphi}_3 - U_{34}\dot{\varphi}_4);$$

$$\frac{\partial \Phi}{\partial \dot{\varphi}_4} = -U_{34}b_3(\dot{\varphi}_3 - U_{34}\dot{\varphi}_4)$$

Moments of generalized forces in Lagrange's equations:

$$M(\varphi_1) = M_{ю};$$

$$M(\varphi_2) = M_{и2};$$

$$M(\varphi_3) = M_{и3};$$

$$M(\varphi_4) = M_{и4} + M_{к};$$

$$M_{к} = M_{к0} = \delta M(M_{к0})$$

The masses of the machine unit and their constituent loads were determined experimentally. In this case, loads of weights b_1 and b_2 were hung on the pulleys (wrapping the rope around the shafts). The time it took for the loads to fall to the ground was measured three times. Accelerations a_1 and a_2 were calculated based on them. They were then calculated by putting them in the following expression:

$$J = [(1 - \frac{a_1}{g})G_1 - (1 - \frac{a_2}{g})G_2] \frac{D}{2(a_1 - a_2)} \quad (4)$$

where pulley diameter;
 free fall acceleration.

The moments of inertia of the masses are as follows:

$$J_p = 0,212 \text{ кгм}^2; J_m = 0,303 \text{ кгм}^2;$$

$$J_{z1} = 0,261 \text{ кгм}^2; J_{z2} = 0,41 \text{ кгм}^2;$$

$$J_{z3} = 0,643 \text{ кгм}^2; J_{z4} = 1,03 \text{ кгм}^2;$$

$$J_{z5} = 1,03 \text{ кгм}^2; J_{\delta 1} = J_{\delta 2} = 3,469 \text{ кгм}^2;$$

The rotational coefficients of elastic elements were determined using the following formula [5,6,7]:

$$(J_p + J_m)\varphi_1 = M_{10} - b_1(\varphi_1 - u_{12}\varphi_2) - c_1(\varphi_1 - u_{12}\varphi_2);$$

$$(J_m + J_{z1})\varphi_2 = u_{12}b_1(\varphi_1 - u_{12}\varphi_2) + u_{12}c_1(\varphi_1 - u_{12}\varphi_2) - b_2(\varphi_2 - u_{23}\varphi_3) - c_2(\varphi_2 - u_{23}\varphi_3) - M_{к2};$$

$$[J_{z2} + u_{z23}^2(J_{z3} + J_m)]\varphi_3 = u_{23}b_2(\varphi_2 - u_{23}\varphi_3) +$$

$$u_{23}c_2(\varphi_2 - u_{23}\varphi_3) - b_3(\varphi_3 - u_{34}\varphi_4) - c_3(\varphi_3 - u_{34}\varphi_4) - M_{к3};$$

$$(J_m + J_{z4} + J_{z5} + J_{z1} + J_{z2})\varphi_4 = u_{34}b_2(\varphi_3 - u_{34}\varphi_4) +$$

$$+ u_{34}c_3(\varphi_3 - u_{34}\varphi_4) - M_{r4}[M_{к0} \pm \delta M(M_{к0})]; \quad (7)$$

The obtained system of differential equations (2.19) was carried out on the basis of the initial conditions at $t=0$ and $\dot{\varphi}_1 = \dot{\varphi}_2 = \dot{\varphi}_3 = \dot{\varphi}_4 = 0$ ва $M_{и2} = M_{и3} = M_{и4} = 0$ as well as at the following calculated values of the parameters:

$$C = \frac{R^2 E F a}{l_p} \quad (5)$$

Where the average radius of the elastic element;

E – elastic element elastic modulus;

F – cutting surface;

l_p – elastic element length;

a – coefficient taking into account the deformation of the elastic element.

Using the expression (5), the coefficients of rotation of the flexible elements from the machine unit were calculated:

$$C_1 = (450 \div 500) \text{ км/рад};$$

$$C_2 = (400 \div 420) \text{ км/рад};$$

$$C_3 = (450 \div 500) \text{ км/рад}.$$

The dissipation coefficients of the elastic elements were calculated using the existing expression [8,9,10]:

$$b = \frac{\psi_y c}{2\pi(\frac{2\pi}{T_g})} \quad (6)$$

Where ψ_y – is the coefficient representing the transmission of rotational motion; T_g – oscillation period.

The following values were obtained for the elastic elements under consideration:

$$b_1 = (6,8 \div 7,2) \text{ кмс/рад};$$

$$b_2 = (5,5 \div 6,0) \text{ кмс/рад};$$

$$b_3 = (6,5 \div 7,0) \text{ кмс/рад};$$

Taking into account the additions of the obtained Lagrange equations, we create a system of differential equations representing the motion of the unit of the machine “Waltz” with a gear with a flexible element:

$$\frac{\partial M_{ю}}{\partial t} = (\omega_c - P \frac{d\varphi_1}{dt}) \psi - \frac{M_{ю}}{T_3},$$

$$\frac{\partial \psi}{\partial t} = \frac{2M_{к}}{T_3} - \frac{\psi}{T_3} - (\omega_c - P \frac{d\varphi_1}{dt}) - M_{ю};$$

$$T_3 = (\omega_c \cdot S_k)^{-1}; \psi = \frac{S_k}{S}(M_{ю} + T_3 \frac{\partial M_{ю}}{\partial t});$$

$$N_{ю} = 18 \text{ кВт};$$

$$n_{ю} = \text{айл/мин};$$

$$\dot{\varphi}_p = 104,6 \text{ с}^{-1};$$

$$\dot{\varphi}_2 = 86,8 \text{ с}^{-1};$$

$$\dot{\varphi}_3 = 57,8 \text{ с}^{-1};$$

$$\dot{\varphi}_{\delta 1} = \dot{\varphi}_{\delta 2} = 57,8 \text{ с}^{-1};$$

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$$\begin{aligned}
 &U_{12} = 1,0; U_{23} = 1,2; U_{34} = 1,5; Z_1 = 30; \\
 &Z_2 = 36; Z_3 = 48; Z_4 = 56; Z_5 = 56; fc = 50\Gamma y; \\
 &\cos\varphi = 0,86; h = 0,85; S = 0,061; S_k = 0,187; M_K = 109,7HM; p = 2,0; \\
 &F = 0,152 \cdot 10^{-4} m^2; a = 2,2; l_p = 0,18m; F = 44 \cdot 10^6 H/m^2; M_{k0} = 156HM; \\
 &\delta M(M_{k0}) = (0,1 \div 0,12)M_{K0}; M_{K2} = 10,5HM; M_{K3} = 12,1HM; \\
 &M_{K4} = 19,7HM; D\delta_1 = D\delta_2 = 0,2M.
 \end{aligned}$$

Numerical solution of the problem and the results of the analysis. In the “Waltz” machine, the rubber shock absorbers are squeezed through the working drums to adjust the density and stiffness over the entire surface. This will ensure that the drums

rotate evenly. Also, due to friction and load changes in the transmission of motion in a two-speed gearbox, the gear wheel is quickly worn out and out of order, the noise increases, the working life of the gearbox is reduced.

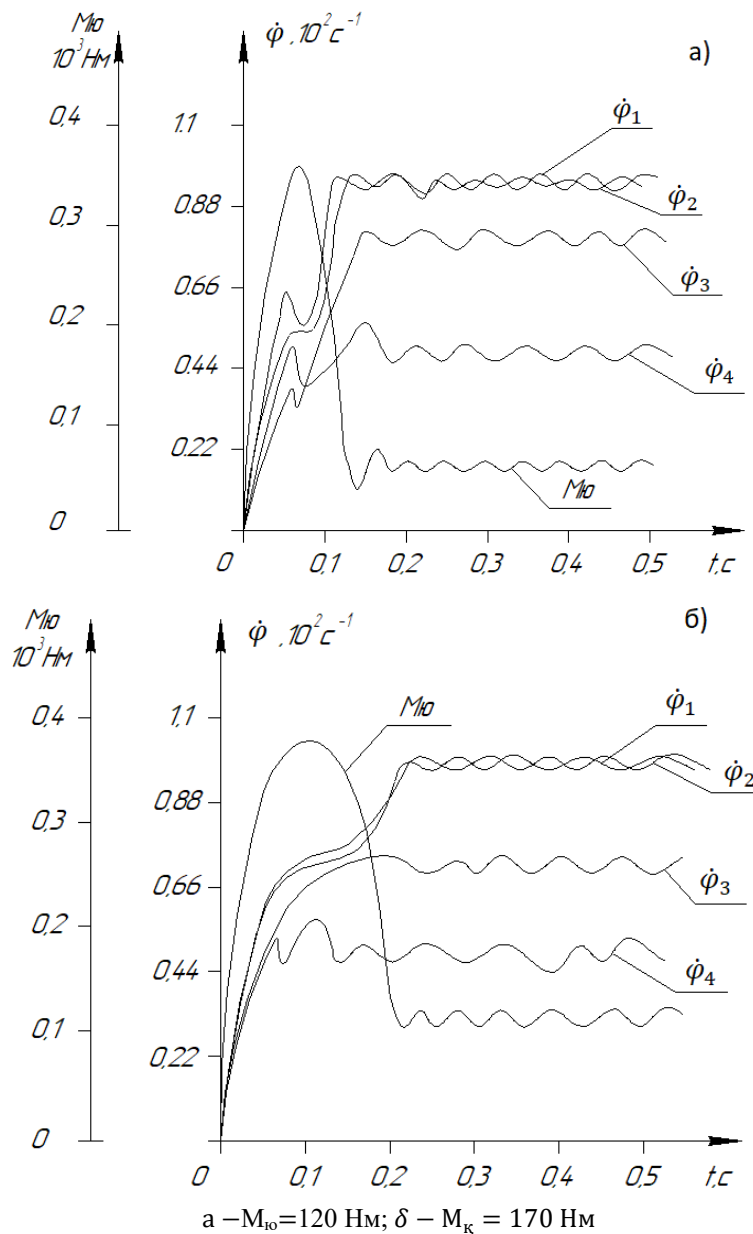


Figure 3. Angular velocities on the rotor, gears, and drums of the Waltz machine and the laws of change of drive load.

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After the installation of the flexible bushing, which includes the middle gear of the gearbox, the impact on the joints is reduced, the amplitudes of vibrations of the loads are reduced, the movement is stabilized. As a result, the workforce increases. Therefore, it is important to determine the parameters of the proposed flexible element, the required values of the extension operating modes, to substantiate the parameters of virginity-dissipation.

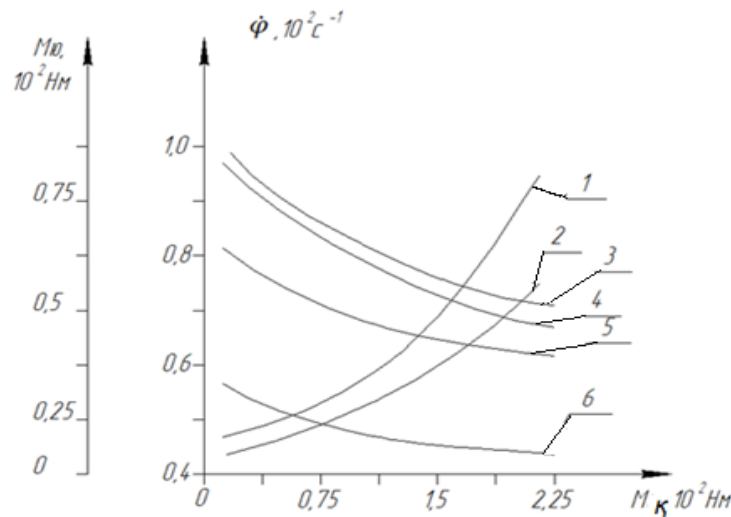
The numerical solution of the resulting (9) system was performed on a PC. In the calculated values of the initial conditions and parameters, the law of change of angular velocities of the drive, gears and working drums, as well as the load on the drive was obtained. The resulting laws are shown in the figure. While the loaded resistance in Figure 3 a is 120 Nm, the resistance in Figure 3 b is taken as 170 Nm. Analysis of the results obtained shows that the average value of the angular velocity on the electric drive shaft at a load of 120 nm was between 98.1 s-1 reducer first gear shaft almost the same 97.2 s-1

It can be seen that the angular velocity of the second gear wheel shaft of the composite flexible element is 82.3 s-1, while the angular velocity of the output gear shaft, the movement of the working drums

is 51.7 s-1. In this case, the torque on the rotor shaft is in the range of 87.3 nm. As the corresponding distributed resistance increases, that is, as the thickness of the shock absorber raw material passing between the working drums increases, or when the density, high-density raw material is used, the load on the drive also increases. That is, when $M_q = 170$ nm, it was found that $M_{yu} = 183.2$ nm. In this case, the resistances due to additional friction were calculated taking into account the calculated values.

As a result of processing the obtained laws, graphs linking the parameters were constructed. Figure 4 shows the angular velocities of the electric drive rotor, drive gear, composite gear, drive gear and working drum shafts, the change in load on the drive, the dependence of the change in technological resistance

Based on the analysis of the graphs, it can be noted that as the distributed resistance increases from 0.37102 km to 2.25 102 km, the angular velocity of the rotor shaft decreases in a nonlinear pattern from 98.7 s-1 to 78.1 s-1, the angular velocity in the flexible element gear shaft from 82.4 s-1 to 68.3 s-1. A decrease to -1 can be observed.



$$1-M_{10}=f(M_k) - J_{10} = 0,25 \text{ кгМ}^2; 2-M_{10}=f(M_k) - J_{10} = 0,212 \text{ кгМ}^2;$$

$$3-\dot{\varphi}_1=f(M_k); 4-\dot{\varphi}_2=f(M_k); 5-\dot{\varphi}_3=f(M_k); 6-\dot{\varphi}_4=f(M_k);$$

Figure 4. Graphs of the dependence of the angular velocities on the shafts of the electric drive rotor, drive gear, compound gear, drive gear and working drums, the change in load on the drive, the change in technological resistance.

The angular velocities of the working drums decreased in a nonlinear pattern from 55.2 s-1 to 48.1 s-1. Correspondingly, it was found that the load on the drive increases in a nonlinear pattern from 0.09102 km to 0.72102 km when the load = 0.212 kgm². When the moment of inertia of the first mass of the machine unit was observed to 0.25 kgm², the load on the drive was observed to increase to 1.09102 km. It is therefore recommended that the technological resistance M_q

(150) nm not exceed 102 km to ensure that the load on the drive (0.9) does not exceed 102 km.

It is known from the theory of machines and mechanisms that [11,12] is achieved by increasing their moments of inertia to smooth the motion of rotating working bodies. But excessive increase of the moment of inertia increases the load, power consumption, the working resource of the machine also decreases. Figure 5 shows graphs of the

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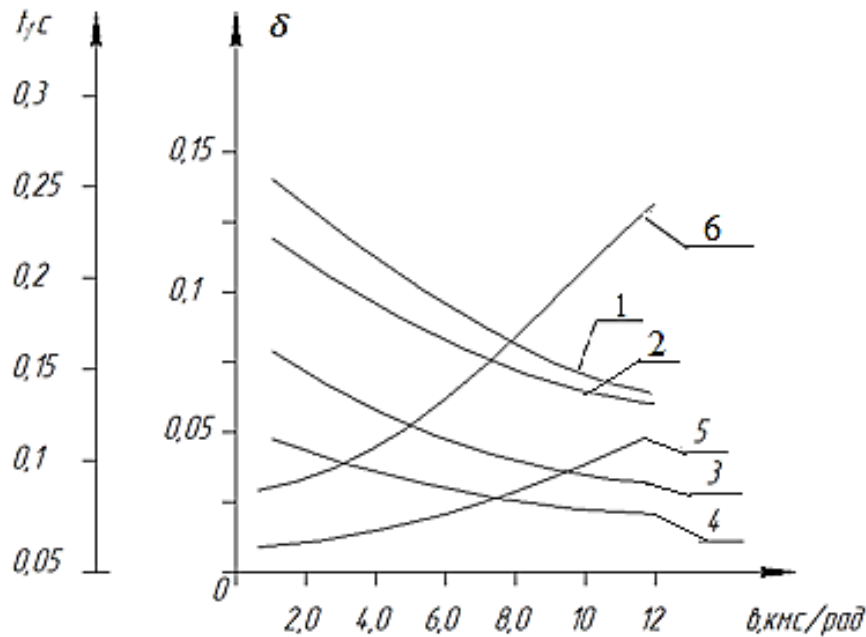
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coefficients of unevenness of the angular velocities of the gears, working drums in the drive of the

technological machine "Waltz" and the moments of inertia of the drive load.



$$1-\delta_1 = f(J_p + J_m); 2-\delta_2 = f(J_u + J_{z1}); 3-\delta_3 = f[J_{z2} + U_{z2}^2 (J_{z3} + J_m)];$$

$$4-\delta_4 = f(J_m + J_{z4} + J_{z5} + J_{\delta 1} + J_{\delta 2}); 5-M_{i0} = f(J_{ки}) - M_k = 120 \text{ НМ}$$

$$6-M_{i0} = f(J_{ки}) - M_k = 170 \text{ НМ.}$$

Figure 5. Graphs of the dependence of the coefficients of unevenness of angular velocities of gears, working drums in the drive of the technological machine "Waltz" and the moments of inertia of the drive load.

For each mass in the graphs, the effect of the moment of inertia of that mass is considered. In this case, the moments of inertia of the masses are equal in the calculated values.

In particular, when the moments of inertia of working drums increase from 0.5 kgm² to 3.0 kgm², the coefficient of unevenness of the angular velocities of their shafts decreases from 0.165 to 0.064. The value of the coefficient of roughness of the angular velocity of the gear element with a flexible element decreases in a nonlinear law from 0.123 to 0.05.

A decrease in the value of the electric drive rotor shaft was found to be from 0.042 to 0.018. It should be noted that according to the results of experimental research, the angular velocities of the working drums do not exceed the coefficients of unevenness (0.05), it is possible to carry out the technological process on the basis of requirements. Therefore, based on the analysis of the graphs, the recommended values of the moments of inertia of the masses are $(J_p + J_m) \geq (0,6 \div 0,8) \text{ кгм}^2$; $(J_m + J_{z1}) \geq (0,9 \div 1,0) \text{ кгм}^2$;

$$[J_{z2} + U_{z23}^2 (J_{z3} + J_m)] \geq (1,2 \div 1,4) \text{ кгм}^2;$$

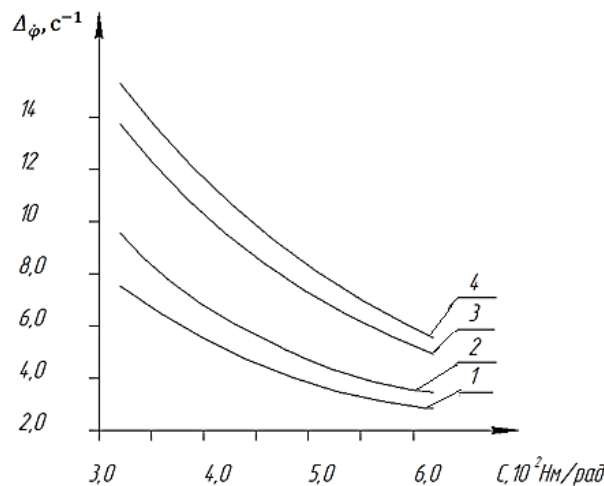
$$(J_m + J_{z4} + J_{z5} + J_{\delta 1} + J_{\delta 2}) \geq (3,7 \div 5,2) \text{ кгм}^2.$$

Based on the recommended parameters, it should be noted that while it is recommended that the machine unit obtain more moments of inertia than the calculated values of the first three masses, it is advisable to reduce the moments of inertia of the working drums relative to the calculated values.

Figure 6 shows graphs of the dependence of the angular velocities of the machine shaft drive shaft, gears and working drum shafts on the rotational coefficients of rotation of the corresponding flexible elements of the vibration coverage. The values of the oscillation coverage of the angular velocities decrease in the nonlinear law as the elastic elements of the machine unit increase in rotation. In particular, when the coefficient of rotation of the coupling elastic element increases from 3.2102 nm / rad to 6.9102 nm / rad, it decreases in a nonlinear pattern from 1.6 s⁻¹ to 3.2 s⁻¹, respectively, the values from 9.8 s⁻¹. A decrease of 4.3 s⁻¹ was detected. Accordingly, as the coefficient of rotation of the flexible ring of a compound gear increases, its values also decrease in the nonlinear law. At the same time, the value decreases from 13.6 s⁻¹ to 4.9 s⁻¹. Hence, it is expedient to drastically increase the coefficient of rotation of the composite gear wheel elastic element.

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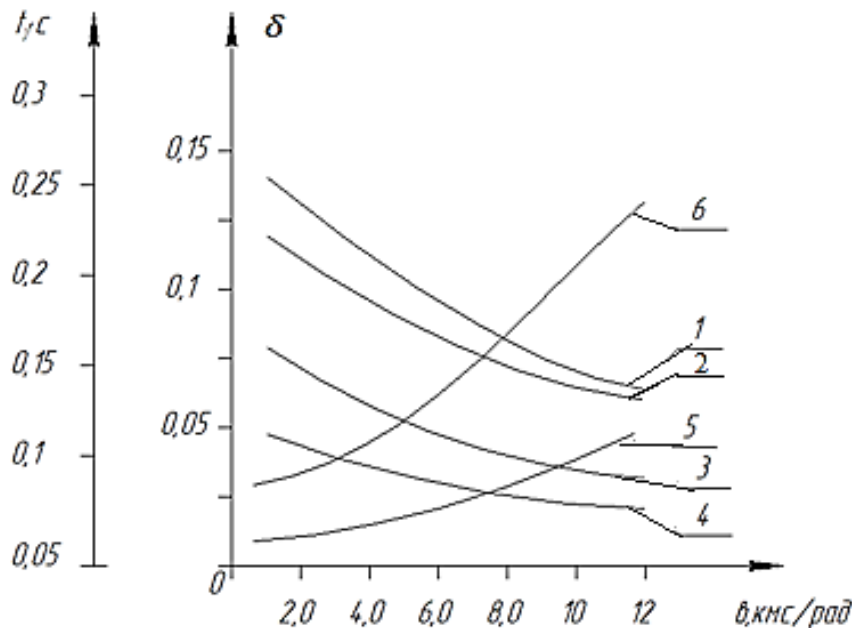
$4-\Delta\phi_4=f(c_3); 3-\Delta\phi_3=f(c_2); 2-\Delta\phi_2=f(c_1); 1-\Delta\phi_1=f(c_1);$

Figure 6. Graphs of the dependence of the angular velocities of the drive shaft, gears and working drum shafts of the machine unit on the rotational coefficients of rotation of the flexible elements corresponding to the vibration coverage.

It is recommended to select the flexible element ring in the range of rotational coefficients of rotation (6.5) 102 Nm / rad to ensure that the values do not exceed (4.0) s-1, taking into account the pitch of the composite gear teeth, i.e. to minimize impact when interlocking teeth. Accordingly, in order to reduce the oscillation of the angular velocities of the working drums, it is also recommended to obtain the coupling coefficient of the recommended values in the range of recommended values (7.5) 102 Nm / rad. The coefficient of virginity of the elastic element of the

first coupling (5.0) was recommended in the range of 102 Nm / rad.

It should be noted that the dissipation coefficient of the elastic element also reduces the angular velocity oscillations. But this increases the loading value. Figure 7 shows the graph of the dependence of the angular velocities on the shafts of the electric drive rotor, gears and working drums of the machine unit on the coefficients of unevenness of the angular velocities on the shafts and the dissipation coefficients of the flexible elements.



$1-\delta_4 = f(b_3); 2-\delta_3 = f(b_2); 3-\delta_2 = f(b_1); 4-\delta_1 = f(b_1);$
 $5-t_y = f(b_k) - M_k = 120 \text{ Нм}; 6-t_y = f(b_k) - M_k = 170 \text{ Нм};$

Figure 7. Graphs of the angular velocities on the shafts of the electric drive rotor, gears and working drums of the machine unit, the angular velocities on the shafts, the coefficients of unevenness and the dissipation coefficients of the flexible elements.

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When the technological coupling increases the dissipation coefficient of the second coupling elastic element from 2.0 kms / rad to 12.0 kms / rad at 120 Nm, the steady-state motion of the system increases from 0.02 s to 0.12 s when the load is $M_q = 170$ nm the time increases from 0.1 s to 0.27 s. This can cause the electric motor to overheat and malfunction. Due to the change in the dissipation coefficient of the elastic element corresponding to each mass, it will be possible to adjust the values of, and (Fig. 7, Figures 1,2,3,4). In particular, when the value of b_2 increases from 1.8 kms / rad to 12.0 kms / rad, the values of decrease in a nonlinear pattern from 0.075 to 0.031. It is therefore recommended that the dissociation coefficient of the composite gear wheel elastic element be in the range of (10.0) nms / rad to ensure that n_i is in the range of (4.0) s-1, respectively.

Respectively, the dissociation coefficients of the flexible elements of the couplings are recommended to be in the range of $b_1 = (5.5)$ nms/rad and $b_3 = (9.5)$ nms/rad.

Conclusions

1. Dynamic and mathematical models of the technological machine "Waltz" with a flexible element gear in the drive were built taking into account the dynamic mechanical characteristics of the electric drive, technological parameters, flexible elements, virginity-dissipative properties.

2. Based on the numerical solution of the problem of dynamics of a four-mass machine unit, the recommended values of the parameters of the angular velocities of the drive, gears and drums, as well as the parameters of the change in drive load were determined.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 10.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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RESEARCH OF KINEMATICS OF CHANGE OF SECONDARY CONTACT STRUCTURES OF WORKING SURFACES OF TOOTH- CUTTING TOOLS

Abstract: The article presents the results of a study of the dislocation densities of a cutting tool made of high-speed steel grade P6M5, its parameters of hardening of secondary structures on contacting surfaces when processing a part made of steel 40X, as well as the results of X-ray structural and tribotechnical analysis, the results of X-ray diffraction analysis of the working surfaces of a cutter made of P6M5 during turning stainless steel and heat-resistant cast iron.

Key words: Reliability, wear resistance, stability, dislocation density, accuracy, running-in, structure, cutting tool, deformation.

Language: Russian

Citation: Mardonov, B. T., & Ravshanov, Zh. R. (2021). Research of kinematics of change of secondary contact structures of working surfaces of tooth-cutting tools. *ISJ Theoretical & Applied Science*, 11 (103), 410-413.

Soi: <http://s-o-i.org/1.1/TAS-11-103-36> **Doi:** <https://dx.doi.org/10.15863/TAS.2021.11.103.36>

Scopus ASCC: 2200.

ИССЛЕДОВАНИЕ КИНЕМАТИКИ ИЗМЕНЕНИЯ ВТОРИЧНЫХ КОНТАКТНЫХ СТРУКТУР РАБОЧИХ ПОВЕРХНОСТЕЙ ЗУБОРЕЗНОГО ИНСТРУМЕНТА ИНСТРУМЕНТА

Аннотация: В статье приводятся результаты исследования плотностей дислокаций режущего инструмента из быстрорежущей стали марки P6M5, его параметры упрочнения вторичных структур на контактируемых поверхностях при обработке детали из стали 40X, а также результаты рентгеноструктурного и триботехнического анализа, результаты рентгеноструктурного анализа рабочих поверхностей реза из P6M5 при точении нержавеющей стали и жаропрочного чугуна.

Ключевые слова: Надёжность, износостойкость, стабильность, плотность дислокации, точность, приработка, структура, режущий инструмент, деформация.

Введение

В процессе трения меняется качество поверхностного слоя материала, и его исходное состояние не определяет взаимодействие тел на всех стадиях его развития. Само деформационное состояние является причиной энерго- и массопереноса. Неоднородное поле напряжений вызывает в кристалле перемещение примесных

атомов из зоны сжимающих напряжений в зону растягивающих, а также движение вакансий в обратном направлении. В результате возникает неоднородное распределение концентраций, стабилизирующее исходную неоднородную деформацию. Структурно-энергетическая стабилизация в рамках одного кристалла осуществляется за счет диффузионных

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механизмов, инициированных деформацией, и определяется потоками различного рода дефектов кристаллического строения. С повышением температуры растёт частота тепловых флуктуаций за счёт которого происходит перемещение дефектов кристаллического строения в определённых условиях эксплуатации.

Влияние степени пластической деформации на приращение упрочнения и повышение химического потенциала поверхностной структуры инструмента можно в первом приближении оценить следующим образом. Между плотностью дислокаций и степенью пластической деформации имеется прямая зависимость, описываемая выражением Ван-Гюрера [90]

$$\rho = 10^8 \cdot \sqrt[3]{\rho_0 \varepsilon} \quad (1)$$

где ρ_0 – начальная плотность дислокаций; ε – степень пластической деформации.

Величину приращения прочности при деформационном упрочнении можно оценить по формуле

$$\Delta\sigma \approx 0,5Gb\sqrt{\rho} \quad (2)$$

с учетом (1) выражение (2) примет вид

$$\Delta\sigma \approx 5 \cdot 10^3 Gb\rho_0^{1/6} \varepsilon^{1/2} \quad (3)$$

Увеличение химического потенциала связано с повышением плотности дислокаций зависимостью

$$\Delta\mu = \frac{Gb^2\rho}{4\pi(1-\nu)\gamma} \cdot \ln\left(\frac{1}{b\sqrt{\rho}}\right) \quad (4)$$

или с учетом (1)

$$\Delta\mu = \frac{C\rho_0^{1/3}\varepsilon}{\gamma}, \quad (5)$$

где

$$C = \frac{10^8 G}{4\pi(1-\nu)} \cdot \ln\left(\frac{1}{b\sqrt{\rho}}\right) \approx (3,36...3,73) \cdot 10^8 \text{ Па}$$

В таблице 1. указаны выражения плотностей дислокаций режущего инструмента из быстрорежущей стали марки Р6М5, его параметры упрочнения вторичных структур на контактируемых поверхностях при обработке

детали из стали 40Х, которое термообрабатывается до различной твердости. Кристаллографическая плоскость $(220)_\alpha$ является чувствительной ко всем структурным изменениям тем не менее, рентгеноструктурным методом, по физическому уширению интерференционной линии кристаллографической плоскости $(110)_\alpha$ определяется плотность дислокаций [59 На рентгенограмме, после проведения стандартной закалки, а также трехкратного отпуска структура мартенситная быстрорежущей стали Р6М5, при высоком фоне, выдавала слабый пик $(220)_\alpha$. Исследование рентгенограммы практически не показало пик $(220)_\alpha$ во вторичных поверхностных структурах полученных в процессе обработки резанием.

Скорость изнашивания металлорежущего инструмента при обработке резанием стали 45 со скоростью резания $V = 1,0$ м/с. показано в таблице 1. Сам факт повышения плотности дислокаций подтверждает деформационное упрочнение при контактом взаимодействии режущего инструмента с обрабатываемой поверхностью материала. Фактически, если первоначальная структура обладало плотностью дислокации $\rho = 9,88 \cdot 10^{11} \text{ см}^{-2}$ и при обработке резанием стали с твердостью HRC 29 практически осталось неизменной ($\rho = 10,08 \cdot 10^{11} \text{ см}^{-2}$), то при обработке резанием данной стали, термообработанной до HRC 39...40, величина плотности дислокации достигается максимума, записанный в данной серии проводившихся экспериментов $\rho = 22,05 \cdot 10^{11} \text{ см}^{-2}$

Изучая полученные результаты, которые приведены в таблице 1., можно отметить, что одна и та же плотность дислокаций поверхностных структур режущего инструмента, образованная при обработке различающихся друг от друга по твердости материалов, могут быть разными по износостойкости. Попытаемся подробнее разобраться с этим. Постараемся конкретнее разобраться с этим. Можно отметить два конкурирующих между собой фактора с помощью которых определяется плотность дислокаций вторичных структур: степенью пластической деформации поверхностных слоев, которое определяется сопряжением фрикционных нагрузок со скоростью скольжения, и температурой контактного взаимодействия. Одну и ту же плотность дислокаций можно получить

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Таблица 1. Результаты рентгеноструктурного и триботехнического анализа контактных поверхностей резов из P6M5 при точении стали 40X

Твердость стали 40X HRC	Скорость резания V, м/с	Плотность дислокаций $\rho \cdot 10^{11}$, см ⁻²	Приращение химического потенциала $\Delta\mu$, Дж/см ³	Приращение упрочнения $\Delta\sigma$, ГПа	Скорость изнашивания J, мм/мин
29	0,58	10,08	21,64	1,29	0,044
31...32	0,38	14,79	30,10	1,58	0,023
36...37	0,06	12,40	26,20	1,41	0,05
36...37	0,08	12,90	26,64	1,47	0,034
36...37	0,10	14,44	39,60	1,83	0,021
36...37	0,12	22,05	42,34	2,1	0,015
36...37	0,18	22,05	42,34	2,1	0,032
39...40	0,05	22,05	42,34	2,1	0,015
В состоянии поставки	1,0	9,88			

за счет нескольких комбинаций имеющихся факторов. Соответственно, структуры, которые обладают одинаковыми плотностями дислокаций, в зависимости от соотношений деформационного упрочняющего и температурного разупрочняющего факторов, могут различаться термической или механической устойчивостью. Можно утверждать, что дислокационные структуры, образованные при значительной высокой контактной температуре, будут иметь повышенной температурной устойчивостью. При механической обработке материалов обладающих высокой твердостью контактные силовые нагрузки и температура принимают относительно высокие значения, следовательно, мы можем предположить, что вторичная структура рабочих поверхностей режущего инструмента, образованная в этих условиях, будет характеризоваться высокой плотностью дислокаций, устойчивой к тепловым и силовым воздействиям. Такая структура должна обладать и повышенной износостойкостью.

К тому же нужно учитывать, при исследовании изнашивания металлорежущего инструмента, контактная структура, полученная процессом приработочного резания, при её дальнейшей эксплуатации на более высоких режимах резания подвергается дополнительной трансформации. Данный процесс всё время сопровождается снижением упрочнения и деградацией дислокационных структур, следовательно главным стабилизирующим фактором является их термическая устойчивость.

Термическую устойчивость дислокаций можно повысить путем их блокирования ноль-мерными дефектами кристаллического строения, образующими вокруг них облака Сузуки и

Котрелла. Из целого спектра легирующих элементов состоит инструментальные стали, в том числе и быстрорежущие, которые могут содействовать к блокировке дислокационных структур [8]. Процесс скопления термически неизменяемых дислокаций при структурной приспособляемости режущего инструмента возможно сравнить созданию упрочненных структур при неоднократной механотермической обработке резанием, когда вследствие пластической деструкции случается наведение дислокаций разной степени стойкости, а вслед за тем в итоге теплового влияния параллельно проходит процесс удаления легкоподвижных термически неуравновешенных линейных недостатков кристаллического строения. Интенсивность роста плотности дислокаций будет выше, чем больше степень пластической деформации. Таким образом можно будет ожидать и большую концентрацию устойчивых дефектов кристаллического строения. В этом случае, при обработке резанием более твердых материалов на контактных поверхностях металлорежущего инструмента развиваются более устойчивые дислокации. Подтверждением этому могут служить результаты рентгеноструктурных исследований контактных слоев инструмента при точении жаропрочных и труднообрабатываемых материалов, представленных в таблице 2.

В качестве труднообрабатываемых материалов использовались нержавеющая сталь 12X18H10T, а жаропрочного – модифицированный высокохромистый чугун ЧХ34. Износостойкость вторичной структуры оценивалась по скорости изнашивания инструмента при точении стали 45 на $V = 1,0$ м/мин.

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

Таблица 2. Результаты рентгеноструктурного анализа рабочих поверхностей реза из Р6М5 при точении нержавеющей стали и жаропрочного чугуна

Обрабатываемый материал	Скорость резания V, м/с	Плотность дислокаций $\rho \cdot 10^{11}$, см ⁻²	Приращение химического потенциала $\Delta\mu$, Дж/см ³	Приращение упрочнения $\Delta\sigma$, ГПа	Скорость Изнашивания J, мм/мин
12X18H10T	0,05	19,2	39,40	1,77	0,021
	0,08	12,83	26,64	1,47	0,035
	0,10	19,60	40,22	1,79	0,012
	0,133	20,14	41,33	1,82	0,016
	0,166	11,29	45,75	1,92	0,008
	0,2	24,96	51,22	2,028	0,0122
	0,25	13,91	28,55	1,53	0,037
ЧХ34	0,03	15,91	32,09	1,62	0,004

Из таблицы 2. видно, что плотности дислокаций вторичных структур, сформированные на различных режимах, могут отличаться незначительно, в то время как износостойкость - более чем в три раза. Тем не менее, общая тенденция повышения

износостойкости поверхностной структуры инструмента с повышением плотности дислокаций проявляется достаточно наглядно.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 10.11.2021 <http://T-Science.org>

QR – Issue



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KNOWLEDGE ASSESSMENT AS ONE OF THE KEY ISSUES IN LANGUAGE ACQUISITION

Abstract: Assessment is one of the most important, may be a central issue of modern foreign languages teaching and learning. It plays a prominent role in achieving the expectations of the country educational Institutions, the language learners and their parents. It is well known that knowledge assessment has its own approaches, traditions, culture and even its own language.

Key words: language teaching, modern methods, techniques, expressiveness, communication, extralinguistics.

Language: English

Citation: Normirzaeva, D. M., & Mansurova, Sh. I. (2021). Knowledge assessment as one of the key issues in language acquisition. *ISJ Theoretical & Applied Science*, 11 (103), 414-417.

Soi: <http://s-o-i.org/1.1/TAS-11-103-37> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.11.103.37>

Scopus ASCC: 1203.

Introduction

In the epoch of increased globalization experienced teachers and teacher trainers are supposed to be able not only to explain the important characteristic features of language assessment, to be knowledgeable in the important features of it but also how to realize it in their everyday activities [5. p 52]. Assessment techniques are of great variety. Those present here know very well, that “Language is the mirror of ethnicity” while “Good assessment is the mirror of good, qualified teaching.”

Qualified assessment today requires a wide range of purposes like:

1. To generate information for students about their knowledge.
2. To ensure that learning objectives have been reached.
3. To further motivate the language learners.
4. To gather data for stake-holders to make them aware of the learners knowledge and to define their further obligation to improve the teaching situation.

5. To gather information for reporting to the parents about their children’s achievements.

6. To select language learners for grouping them according to their level of knowledge.

7. To identify the strong and weak points of language learners to undertake the necessary measures to improve their language acquisition.

8. To provide certification.

9. To find out the fulfillment of requirements of the State Educational Standards.

10. To evaluate the quality of the teaching material, to yield the diagnostic information to improve further teaching in achieving the communicative competence.

11. To support teaching and learning.

12. To provide necessary information about language learners.

13. To provide necessary information about teachers, their dedication to their field of profession and professional knowledge.

14. To assess objectively curriculum, State Educational Standards.

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15. To evaluate the degree of continuity and succession of the materials in course-books being used.

16. To enhance the motivation of students to learning foreign languages which in its turn provides the enhancement of the teachers' prestige and the prestige of the educational Institution where foreign languages are taught.

There are certain obligations that are important to know for those who are involved in assessment: an experienced assessors or a teacher who is a qualified specialist in his/her field should:

- Know or understand properly the key principles of modern foreign languages knowledge assessment;
- Be familiar with the key assessment technology;
- Understand the various stages of the assessment process;
- The range of activities for knowledge assessment;
- To be aware of the purpose of internal and external assessment.

In teaching and learning foreign languages the linguodidactics or representatives of applied linguistics differentiate two types of skills: receptive and productive.

Listening and reading skills are said to be receptive while writing and speaking are productive [6. p 122]. Despite the difficulties associated with assessing the speaking skills i.e. one of the productive skills, there are convincing, I would even say persuasive reasons that speaking should receive as much attention as possible since in modern communicative language teaching, *speaking* is a prominent component of the language curriculum (False, 2006; Jones 2005). Besides this, everybody knows that English is a lingua-franca, i.e. global language. In the interests of promoting clear international communications, we'll have to recognize the importance of spoken English.

There is another reason for this: speaking is said to be a complex skill which requires the simultaneous use of pronunciation, grammar, vocabulary, fluency and comprehension including sociolinguistic aspects of speech, discourse and strategic competences, concerned with relationships beyond the sentence level, i.e. rules of cohesion and coherence, holding communication together in a meaningful way [7. p 166]. The strategic competence is "the way learners manipulate language in order to meet communicative goals" (Brown, H.D. 1994), i.e. the ability to know when to take the floor, how to keep a conversation going or end it, and how to resolve conversation or communication breakdowns.

Many specialists insist on equal focus on both of fluency and accuracy in designing speaking assessment in which 50% of students' grade would

come from aspects of fluency such as initiating and maintaining communication and 50% would be based on how accurately the student spoke.

SPEAKING SKILLS

Accuracy

Fluency

- grammar
- vocabulary
- pronunciation
- intonation
- stress

Ability to express ideas, i.e. content or ideas

Since now more than ever, speaking plays an important role on the knowledge assessment, we recommend K.S. Folse's rubric for this purpose. One can take a task of retelling stories after listening to an authentic tape-recorded text or after reading it. This speaking assessment consists of four categories: grammar, vocabulary, fluency and pronunciation. This assessment system is simple enough which can be easily introduced to the teaching process. Its guides are also simple enough to apply. It is easy to bring it into conformity with CEFR if it's important. The copyright agency allows to reproduce this table which is, you know, a very rare thing.

Speaking Assessment

Name _____

Date	Category	Your score
	Grammar	25 points
	Vocabulary	20 points

Guide

24-25. Excellent. Few errors; communication of ideas is clear.

22-23. Very good. One or two errors, but communication is mostly clear.

Very good. One or two errors, but communication is mostly clear.

20-21. Good. Several errors in syntax, but main ideas are mostly clear.

18-19. Fair. Noticeable errors that occasionally confuse meaning.

12-17. Weak. Language is marked by errors. Listeners' attention is diverted to the errors rather than the message. Meaning is often unclear or broken.

0-11 Unacceptable. Communication is impeded. Too many errors in this task for a student at this level.

20 Excellent. Correct selection of words and idioms. Variety of vocabulary.

18-19 Very good. Correct selection of words and idioms. Some variety of vocabulary.

16-17 Good. Mostly correct choice of vocabulary. Meaning is clear.

Fluency 30 points

Pronunciation 25 points

14-15 Fair. Noticeable vocabulary errors that

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occasionally confuse meaning. Reliance on simple vocabulary to communicate.

12-13 Weak. Many vocabulary errors. Listeners' attention is diverted to the errors rather than the message. Meaning is often unclear or broken.

0-11 Unacceptable. Too many errors in this task for a student at this level. Communication is impeded.

29-30 Excellent. No hesitations at all.

27-28 Very good. Hesitations in one or two places but immediately continued.

24-26 Good. Occasional hesitations but recovered well.

21-23 Fair. Noticeable gaps that catch listeners' attention usually followed by recovery.

12-20 Weak. Several short periods of silence. Several gaps that disrupt the flow of information. Listeners' attention is diverted to the gaps rather than the message

0-11 Unacceptable. Periods of silence. Gaps without good recovery.

24-25 Excellent. Few errors; native-like pronunciation.

22-23 Very good. One or two errors, but communication is mostly clear.

20-21 Good. Several pronunciation errors, but main ideas are understood without problem.

18-19 Fair. Noticeable pronunciation errors that occasionally confuse meaning.

12-17 Weak. Language is marked by pronunciation errors.

Listeners' attention is diverted to the errors rather than the message. Meaning is often unclear.

11. Unacceptable. Too many errors in this task for a student at this level. Communication is impeded.

It is important to mention that for effective language learning the student's attendance of language classes is important. They need to come to class on a regular basis. It is not surprising that poor attendance correlates highly with poor knowledge and poor test results [8. p 41]. Regular attendance provides positive results in acquisition expected communicative competence.

Our goal in this presentation was to obtain sufficient background and an overview on the second language acquisition and to work out certain measures

to assess learners' knowledge.

One cannot but agree with H.H. Stern (1986) when he writes that the problem is to study language learning behavior of language learners i.e. what do learners do to learn a language in the classroom or in a free learning situations? The answer is:

- To tap the insights of the learners themselves:
- To inquire into their objectives, strategies, and techniques, their thoughts and feelings about language learning as well as steps and stages perceived by them as necessary to master the language.
- To make experimental, observational, or introspective studies of cognitive processes involved in language learning, such as: attending, imitating, memorizing, rehearsing, probing, matching, guessing, comparing, inferring, forming hypotheses, generalizing, verifying and planning. It would also be valuable to explore by observation, experiment, or introspect the motivational and affective concomitants of the learning process, for example, persistence, elation, frustration, humour and so on. At present, we are still at the beginning of the direct study of second language learning behavior.

The overall aim of testing learners is assurance of quality and gaining public confidence. Testing is logistically complex and there are many points at which human error can occur. When it does, there is an understandable outcry. Trust is the system that may be undermined. Therefore, our examination or testing boards need to adopt sophisticated approaches to assure quality, reduce risks and eliminate errors. The knowledge assessment involves test-setters, markers, and supervisors. If we create trustworthy culture to provide quality, establish an effective system of internal control, eliminate human error, implement fair and transparent results and appeal processes, we may achieve the goal foreseen.

If we start teaching foreign languages taking into account the instructions mentioned above it will provide supportive environment for language learners, our classes will achieve the goals foreseen by State Educational Standards. The exposure of the target language in its natural setting will further improve the expected results in our educational Institutions.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 11.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN TEACHING ENGLISH

Abstract: *The usage of information and communication technologies in teaching foreign languages has accelerated dramatically in the system of education in recent years. It goes without saying that technology-aided direction has an essential role to contribute high quality of teaching skills. Technology is an influential tool for both teachers and students from which they obtain more profit. It is self-evident that our century is the era of technology. That is why today's atmosphere requires from teachers to be aware of information and communication technologies and they need to know how to assimilate it into their teaching process. In addition the way of teaching foreign languages with modern technologies has many effectual strategies in the learning course.*

Key words: *information and communication technologies, education system, era of technology, educational process.*

Language: English

Citation: Khalikova, L. U., & Shakirova, S. T. (2021). Use of information and communication technologies in teaching English. *ISJ Theoretical & Applied Science*, 11 (103), 418-420.

Soi: <http://s-o-i.org/1.1/TAS-11-103-38> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.11.103.38>

Scopus ASCC: 1203.

Introduction

Students can learn the target language with the help of information and communication technologies without any difficulties. Learners get better opportunity to amend their target language skills when teaching is supplied with technology. As a result students can be motivated to succeed better because of technology-based teaching and learning surroundings.

Smart boards, computers, smart phones, screens and etc. are facilitating opportunities to learn foreign languages. Smart boards are helpful instruments in the class. For example, students can be taught to pronounce correctly and fluently with easily utilizing of native speaker's voice with the help of smart boards.

This article discusses the features of information and communication technology (ICT) as one of the good advantages in a study environment and also presents effects of technology-based instruction as the

main system of today. However, we should pay attention to teaching and learning as social processes and it is a communication between teacher and students, thus technology makes learning process easier, but does not change this social operation [1. 254 p].

Teachers should integrate technology in their lessons. Consequence variety of technological materials offer a lot of benefits. It is not great surprise that utilizing technology in teaching styles has positive results in teaching and learning target language. It is time that institutions should supplement traditional teaching with the use of technology. Undoubtedly, technology is considered as a part of everyday life nowadays and humans especially young generation are good at using information and communication technologies. Teaching by traditional strategies and methods is not enjoyable [2. 141 p]. On

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

the other hand technology can make lessons much more interesting because interactive lessons bring effective results.

In our today's world new generation grows with technology. The great extent used technological device is smart phone. It is a helper for students and teachers to improve listening, reading skills. Moreover, students can watch and listen foreign language videos or speeches, as a result they improve their target language progress.

Experienced teachers make a natural atmosphere for learners during the lesson. Most teachers account before lessons what they are going to teach and what kind of activities they can do in their lessons. In order to provide the lesson effectively they make the plan of the lesson and find resources to use. In this condition technological devices are the best thing to make some useful activities and they enhance teacher's lessons. For instance, teachers make activities on computer and can show students on the smart board or screen. This process is interesting and enjoyable for students and it is the best method learning foreign languages with any kind of activities. It helps to understand and remember the theme easily [3. 56 p]. Activities help students to learn new words and technology has an important role in methods of teaching. Learners can achieve success with undivided motivation with the help of integrating technology to language teaching. Integration can consist of games. Games suggest a lot of benefits to students but we should not forget that too many games are not a good way of teaching. To investigate and integrate the studies with technology-aided instruction is the aim to develop language skills. Nowadays there are computers and the Internet in every studying area. Information and communication technology is the best assistant to the teachers, it can answer the questions "what to teach", "when to teach", "how to teach" and how to integrate all their plans to the agenda.

Computer based teaching methods have already occupied a significant role in teaching foreign languages. We should admit that technology considerably enhance teaching and learning foreign languages. Technology can include all kinds of tools of computers in the classroom [4. 121 p]. There are many tools that we can use during the lesson like: projector, presentations, videos, conference tools, interactive books, online dictionaries, e-books, interactive boards, learning foreign language websites, video games.

When different kinds of technologies first created people had to think how to use them or present the information with the help of copy machine, computer, screen or how to use tape recorder and others. However, nowadays teachers should find the way how to access information and transform it with technology. Today it is obvious that teaching environment demands change active learning into interactive one by sharing ideas, collaborating with

others and creating videos [5]. In today's developed world it is important to remember that textbooks are not sufficient any more to teach foreign languages, teachers need organize alive process and provide supplemental resources. We can reach this by creating visual pictures, changing dialogs, making games, quizzes, slideshows and supplementing the lesson with online games, songs, flashcards, videos and etc.

In the past traditional way of teaching was only based on transmission of knowledge. However, it is no longer sufficient today and society of nowadays requires learners to be able to face a great number of complex situations. Therefore, introducing technology to the studying process is also the best tool to consider the goal of the student. Information and communication technology integrated in every sphere of our life and every job, thus educators and teachers must find a balance between using technology and interpersonal skills.

It has been suggested that it takes a lot of time and hard work to master a language and it is seen that there is not enough time in class, because time is limited, therefore language teachers should give information to students about how to access information and knowledge in order to become autonomous learners. For example, teachers need to explain what is good and available in the Internet to learn foreign languages, provide online materials and create online environment. In the Internet learners can communicate with native speakers. It is the best way to improve their speaking skills [6. 157 p].

Information and communication technology influence in teaching and learning with some features such as interactivity, communicability, speed, adaptability. Technology makes possible actions and interactions notably quickly. It provides communicating in the classroom and beyond the classroom too. One of the big advantages of information and communication technology is interactivity that considering interactive computer resources and applications.

With the assist of technologies, teachers show students video and audio materials according to target culture. In addition, in order to fascinate and involve students in the class using technologies students can communicate with each other easily in target language, collaborating and interacting with course material in variety of methods [7].

People have always learned something hand in hand with other humans and technology may balance connection between teacher and learner in the education system. Therefore, the role of teacher is indisputable significant. Nevertheless, technology itself is not the essential way as we value it. If there are not enough computers for every student in the classroom, teacher can record a video with topics and they transform or share to their flashcards and watch them at home. Student can also share presentations, project works, assignments with teacher and peers.

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Thus, we can create teaching and learning environment and organize it more interactive not only in the class even outside the class too. However, no doubt that interactivity can also be made by using simple black board and chalk [8. 77 p]. Class discussions and debates are also lively and natural process while teaching and learning foreign languages, such activities improve and increase students' outlooks and knowledge. Word competitions or role plays are also positive activities that can impact students. Therefore, teachers need to create more effective ways of teaching in order to enhance students' knowledge. They should make sure technology is the assistant tool in achieving good results and educational goals.

The usage of videos in foreign language teaching is important nowadays. There are a lot of videos in the internet that teachers can show their students during the classes. Using videos in the classroom helps to increase level of interest and motivation. After watching video students might discuss and talk about what they watch and they can do different activities according to the video [9]. The video is visual as well as audio material too. Because it gives an opportunity to students to hear and see the target language. They observe and learn native speakers' speeches, intonation and expression and they try to understand the context. Teachers can present video in the classroom and may give making interviews or some tasks related to video. In that case, student watch the video at home again and try to understand and make their own speech in the target language [10]. The video

helps to enrich the learning as useful tool, but we should remember technology delivers content. We make sure with the aid of technology someone can achieve good results if they work hard constantly.

Technology, teachers and learners are connected phrases to each other in today's world. For sure, we cannot refuse good teaching methods and practices by increasing the number of skillful teachers and at the same time we should admit revolution of educational system integrated with information and communication technologies. Teachers and learners should develop and build technology-based atmosphere during educational process. Technology-aided instruction contribute markedly to teaching and learning and leads to achievement effectively. It is generally believed that integrating technology into language teaching aids learners to improve their knowledge and encourages achieving better results. In the final part, I would like to say that information and communication technology is most important aspect and plays essential part in our everyday life. Among the educational community, utilizing these kind of technologies has risen rapidly. It has already been considered to integrate technology in teaching and learning foreign languages as the best and effective way because it provides many beneficial strategies in the learning process. Technology helps to organize lessons more interactive and interesting as well as to learn target language easily. Learners can take a better chance to improve their language skills when lessons integrated with technology.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 11.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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FEATURES OF TRAINING OF SPECIALISTS OF THE ENGLISH LANGUAGE

Abstract: *It is difficult to imagine a modern society without cooperation with representatives of different countries. Currently, international cooperation has increased significantly in various fields, such as education and culture, economics and politics. The growth of relations between states is unthinkable without knowledge of foreign languages. Knowledge of foreign languages is especially important in order to determine partnerships between organizations, departments, social organizations, educational institutions, non-profit organizations.*

Key words: *Society, economics, politics, foreign language, language learning, translation activity.*

Language: *English*

Citation: Tulaboeva, G. T., & Saydalieva, D. Z. (2021). Features of training of specialists of the English language. *ISJ Theoretical & Applied Science*, 11 (103), 421-423.

Soi: <http://s-o-i.org/1.1/TAS-11-103-39> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.11.103.39>

Scopus ASCC: 1203.

Introduction

Recently, when the political, economic and social conditions of life dictate the priorities of using a foreign language as a means of communication, the question of changing the methodology of teaching a foreign language in higher education is becoming more urgent. In order to meet the state requirements put forward to the content and level of training of graduates of higher educational institutions, there is a need for almost free possession of oral and written foreign language speech. However, a limited number of study hours allocated for the study of a foreign language are a serious problem. The study of foreign languages in the university aims to practical mastery of the language, the specificity of which is determined by the subsequent professional activity.

In modern methods, the problem of teaching a foreign language for communication purposes is given quite a lot of attention [3. p 40].

Meanwhile, insufficient attention has been given to the problem of teaching the grammar of a foreign

language at a non-linguistic institution. The development of grammatical skills in foreign-language communication can lead to a high level of student training, which will ensure them in the future the opportunity to competently participate in business meetings, presentations, maintain contact during a conversation, telephone conversations, etc.

The prerequisites for the formation of methodological bases for teaching communicative grammar were developed by foreign and domestic methodologists in the framework of a communicative approach. This approach involves immersing the student in the language process, which provides a more natural environment for the perception of a foreign language than classes with the dominant role of formal grammar. Nevertheless, there is a danger that such an approach to learning a foreign language can lead to the development of a grammatically incorrect form of speech. As you know, the formation of grammatical competence is an integral part of the formation of language competence in general. However, in the

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domestic methodical literature, the communicative approach is used mainly for the development of oral speech skills, while the grammatical aspect of this approach is developed, not clearly enough.

Working with students of power engineering faculty at a non-linguistic university convincingly showed that:

- students experience difficulties in the situational use of grammatical phenomena;
- students do not have sufficiently developed skills in the use of grammatical forms;
- Many students have learned to use very simple grammatical structures in their speech, making it difficult to use the elements of the language that make the foreign language statement natural.

The emerging problems can be resolved by studying the theoretical backgrounds associated with the mechanism of the formation of grammatical skills in the learning process. It is necessary to study the theoretical prerequisites associated with the mechanism of the formation of grammatical skills and abilities. In practice, it is necessary to develop a complex of effective didactic methods of teaching communicative grammar.

The study of grammar in the framework of the communicative approach led to the conclusion that grammatical phenomena are studied and acquired not as separate forms and structures but as a complex of means for expressing certain thoughts, attitudes, communicative intentions when the linguistic and communicative competence is interrelated in the speech act. Since the main purpose of language learning is communication, the studied grammatical phenomena are limited to situational parameters that take into account social, semantic and discursive factors. Formation of communicative competence, which has an internal structure and assumes a hierarchical relationship between its components, includes the formation of a linguistic competence containing numerous aspects of linguistic knowledge, including grammatical competence. Study of traditional systems of training, distribution based on the ideas of the simplicity and complexity of certain structures for trainees, it seems to be unauthentic and unrealistic from the point of view of the communicative approach, because grammatical structures tend to accumulate together into certain blocks in certain types of communication [3. p 68].

Levels of the development of communicative skills were developed in accordance with the requirements put forward by the Council of Europe for programs for teaching foreign languages, based on a competence approach to learning. Specificity of the formation of communicative grammatical skills is determined by methodological methods and means. The analysis of relevant methods and tools used to develop communicative grammatical competence made it possible to identify and describe such options as: – listening receptions, stories, elements of drama,

information disequilibrium, games with problem-oriented tasks; – means - texts, graphic images (pictures, diagrams), songs, poetry. It should be noted that traditionally the teaching of a foreign language in a non-linguistic university was oriented toward reading, understanding and translating special texts, as well as studying the problems of the syntax of scientific style [1. p 28].

Now it is necessary to think about shifting the emphasis in training to developing speech communication skills on professional topics and conducting scientific discussions, especially since work on them does not interfere with the development of skills, knowledge, since it is on them that it is based. Oral speech in the form of training should be understood as listening or reading, understanding and reproductive reproduction of the listened or read in the forms as oral, that is, dialogical or monologic, and written speech. Thus, we are talking about the implementation of the speech act of speaking in the process of oral communication between two or more persons. Speaking about the system of exercises that precede oral communication, the teacher should remember about their overall construction and dosage of difficulties: from one difficulty in one exercise to recognizing similar phenomena, the recurrence of the study material in small doses for a long time, automatism, the complication of exercises, etc. Although one of the main and indispensable conditions must remain a constant communicative orientation of their speech in the context of specific speech situations in the educational and scientific field of activity [1. p 90].

Working in a non-linguistic university, a teacher of a foreign language should know well the features of scientific and economic texts on the specialty being studied and, if necessary, introduce the students to them. First of all, this is the presence of special terminology, special general scientific vocabulary, specific vocabulary, and those or other complex grammatical constructions. It should be born in mind that the teaching of oral speech in a foreign language, especially in a non-linguistic institution, is a complex and time-consuming process, since the student's speech should contain elements of a corresponding text genre, for example, a scientific style.

The work of the teacher is facilitated by the fact that this speech can be close in many respects to the teaching text that is the basis for teaching and to have fewer arbitrary situational possibilities. Many "life" situations can be "lost" in the audience, when students from training exercises go to a dialogue [7. p 49]. It can be about listening, reading, memorizing, retelling dialogues, completing them according to a given situation or linguistic material and compiling them on this or that principle freely. You can use full or partial reverse translation, etc. The main thing is the ability to isolate the main topic of the problem, the ability to correctly describe, formulate, object, deny, look for

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the cause, and so on. [5. p 27]. When developing oral language skills in a foreign language by profession, it is necessary to remember that its monologic element is not inferior to the dialogical one. As is known, as one of the ways to implement the humanization of education in a non-philological university, the technology of teaching a foreign language is developed and implemented on the basis of using the potential of this discipline and the communicative and activity approach used in conjunction with the principles of linguistic culture [6. p 38]. The main components of this approach were the following provisions:

- the teaching is considered as active, conscious, creative activity;
- in the learning process the activity of the cognizing subject is manifested;
- a foreign language serves as a means of

communication, this is its communicativeness;

- learning a foreign language has a common communicative orientation, focus on the final result;
- mastering the means of a foreign language is aimed at the practical use of them in speech activity;
- by means of a foreign language you can influence the communication partner and receive information.

Linguistic culture is considered as a method studied a foreign culture through language, an important factor in educating students about the feelings of citizenship, internationalism, humanism, tolerance. In other words, the teaching of a foreign language should be based on the developed linguistic-pedagogical model of organizing problems in teaching foreign-speaking, based on the integration of cultural, personality-activity, project approaches.

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SOI: [1.1/TAS](https://doi.org/10.15863/TAS) DOI: [10.15863/TAS](https://doi.org/10.15863/TAS)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 11.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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RESEARCH OF PROCESSING PRODUCTS OF RUBBER-CONTAINING WASTE IN THE PRODUCTION OF BITUMINOUS BUILDING MATERIALS

Abstract: In this work, studies were carried out on the introduction of crumb rubber (RC) into road bitumen and bitumen-mineral mixtures and it was determined that for the modification of petroleum bitumen it is necessary to use only the tread part of a tire with a crumb size of 0.8-2 mm. The optimal amount of RC additive in bitumen is 4 -5%. In this case, the decrease in the penetration depth of the needle (penetration) at 25 ° C does not exceed 19% for BND bitumen 60/90, and 28% for Baki80 / 25 bitumen, while the extensibility decreases, respectively, from 98 to 17 0.1 mm and from 100 to 26 * 0.1 mm.

Key words: Bitumen, modification, penetration, rubber crumb, polymer, physical and mechanical parameters, softening temperature, swelling, frost resistance.

Language: English

Citation: Shixaliyev, K. S., Axmedova, N. I., & Latifova, H. I. (2021). Research of processing products of rubber-containing waste in the production of bituminous building materials. *ISJ Theoretical & Applied Science*, 11 (103), 424-427.

Soi: <http://s-o-i.org/1.1/TAS-11-103-40> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.11.103.40>
Scopus ASCC: 2200.

Introduction

Problem and its relevance. Over time, during storage and under operating conditions, under the influence of sunlight and air oxygen, the composition and properties of bitumen change: the relative content of solid and brittle components increases in them and, accordingly, the amount of oily and resinous fractions decreases, in connection with which fragility and hardness increase (aging process) [1-5] .. Petroleum bitumens are widely used in road and civil construction, due to their high plasticity, the ability to withstand the effects of low temperatures, temperature changes, various deformation loads without

destruction [9-10]. The main consumer of petroleum bitumen is road construction, currently up to 90% of the volume of commercial bitumen produced worldwide is consumed by the road industry.

It is possible to improve the properties of bitumen by combining them with polymer additives

The use of crumb rubber with a particle size of 2-8 mm in asphalt concrete mixtures led to a decrease in the service life of asphalt concrete pavements due to the "impossibility of forming a homogeneous material capable of taking loads", although at the same time in the initial period of operation of such coatings (immediately after laying) increased crack resistance

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and high deformability, water resistance, reduced noise and vibration levels, reduced cases of ice crust formation, increased adhesion, reduced vehicle braking distance [6-8].

Polymer bitumen materials can be considered as composites in which bitumen plays the role of a matrix, and a polymer is the dispersed phase. At low polymer concentrations, the compositions can be considered as dispersion-strengthened. In this case, hardening occurs due to the fact that fine dispersed particles prevent the propagation of cracks in the matrix. This effect is observed when the content of the dispersed phase is 2-4% by volume. At a higher concentration of polymer in bitumen, the compositions can be considered as fibrous or resinous. The matrix turns into a medium that transfers the load to the fibers, and in the event of their destruction, redistributes the stresses. Such compositions are characterized by increased strength, elasticity and resistance to fatigue fracture, which is especially necessary to ensure the operational reliability of the material, for example, polymer-bitumen compositions modified with butyl rubber and polyethylene [8-11].

Experimental and Discussion

Materials

Due to the improved characteristics of the binder, especially adhesion, the service life of asphalt concrete pavements prepared using RBK binder is at least twice as long as the service life of coatings using traditional bitumen under the same operating conditions due to the higher crack resistance, water resistance, shear resistance of the resulting asphalt concrete. Such coatings can reduce the level of noise and vibration, reduce the possibility of ice crust formation, increase adhesion, shorten the braking distance and, in addition, can be 1.5-2 times thinner

Rubber waste was used to modify bitumen grades TB 25/40, TB 70/30 and Wax 85/25. The physical and mechanical parameters of the bitumen used are shown in Table 1, and the formulation based on rubber dust is shown in Table 2. Subsequently, on the basis of the obtained mineral powders and active bitumen (B75), an asphalt-concrete mixture of the following composition was prepared: (mass parts); RK -; bitumen -; high molecular weight petroleum acid and sulfur.

Table 1. Composition formulation based on rubber dust (RP).

Component name	№ Sample				
	1	2	3	4	5
	Content of mass parts				
Bitumen	100	100	100	100	100
rubber crumb(RC)	2	4	6	8	10
Sulfur	-	2	2	2	2
high molecular weight petroleum acid	2	3	4	5	6

Table 2. Basic properties of original and modified bitumen.

Defining properties	Initial bitumen	modified bitumen		
		Sample3	Sample4	Sample5
Depth of needle penetration at 25C, mm / 10	65	50	37	25
Softening temperature according to "KiSh", ° C	80	84	91	95
Elongation, sm	65	51	46	25
Brittleness temperature according to Fraas, °C	-10	-5	-2	0

In a number of experiments, high molecular weight petroleum acid was first mixed with the mineral components of asphalt concrete using standard mixing equipment, then the mixture was poured with hot bitumen and additionally mixed for only 50-100 seconds.

Despite such a short mixing time, effective formation of strong bonds between the rubber

powder particles, bitumen molecules and high molecular weight petroleum acid occurs. As a result, the temperature coefficient of strength of asphalt concrete significantly decreases, the softening temperature of the road surface does not increase. In the future, we added other components to the composition of the compositions (table3)

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Table 3. Composition of bitumen-polymer compositions

Composition components	Content of components, wt. parts. By examples								
	1	2	3	4	5	6	7	8	9
Rubber crumb	-	5	10	15	20	25	30	35	40
Bitumen	200	200	200	200	200	200	200	200	200
Filler	200	200	200	200	200	200	200	200	200
Mineral powder (NMP)	150	-	-	-	25	40	50	60	80
high molecular weight petroleum acid	-	-	-	-	10	10	10	20	20
Mixing temperature of components in the mixer, ° C	100	70	90	100	160-180	70	90	70	100
Mixing time, min	15	10	12	15	65-120	10	12	10	15

The resulting granulated bitumen-rubber composition was tested according to standard procedures. The data are presented in tables 4, 5 and 6.

Table 4. Indicators of physical and mechanical properties of asphalt concrete mixture

Indicator names	Samples			
	1	2	3	4
Compressive strength, MPa, At 20 ° C 50 ° C	2,2 0,9	- -	- -	- -
Water resistance coefficient,%	0,90	-	0,95	0,89
Water resistance coefficient at long-term water saturation,% by volume	0,86	0,90	0,94	0,90
Swelling,% by volume	0,6	0,9	0,5	1,0
Residual porosity,% by volume	2,1	2,4	2,0	2,3

Table 5. Properties of bitumen-polymer compositions

Indicators	Indicator values by example								
	1	2	3	4	5 prototype	6	7	8	9
Tensile strength at break, MPa	4,5	10,0	6,0	6,5	Tears without load	7,0	8,0	5,0	9,5
Elongation at break,%	650	850	1100	780	-	900	900	700	830
Elongation at break,%	63	50	35	58	20	45	43	40	45
melt flow rate at T = 190 ° C, P = 49 N, g / 10 min	18	20	40	35	100	30	35	30	25

Table 6. Physical and mechanical properties of crushed stone-mastic asphalt concrete ShchMA-10 with the introduction of RS on stone materials

№	The name of indicator	Standards in accordance with GOST 31015-2002	0 %	0,1 %	0,2 %	0,3 %	0,5 %
			rubber crumb				
1	Density (bulk density), g / sm ³	-	2,39	2,40	2,40	2,41	2,41
2	Residual porosity,%	2,0-4,0	3,761	3,358	3,358	2,956	2,956
3	Water saturation,% by volume	1,5-4,0	2,82	2,33	2,23	2,16	2,01

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4.	Compressive strength, MPa at temperature: 200 ° C 500 ° C	- 2,5-0,70	3,29 0,75	3,52 0,87	3,67 1,00	3,99 1,11	4,12 1,12
5.	Water resistance coefficient,%	-	0,86	0,92	0,94	0,95	0,97
6.	Water resistance coefficient at long-term water saturation,% by volume (15 days)	0,75	0,79	0,86	0,88	0,91	0,92
7.	Crack resistance - ultimate tensile strength at fracture at a temperature of 0 ° C, M	3,0 – 6,5	3,48	3,82	3,99	4,21	4,16
8.	Internal friction coefficient tg	0,94	0,89	0,90	0,92	0,92	0,91
9.	Shear adhesion at a temperature of 500 ° C, MPa	0,20	0,18	0,33	0,57	0,60	0,65
10.	Binder runoff rate,%	0,20	0,24	0,19	0,18	0,15	0,13

As can be seen from the data, the introduction of 2 wt% active rubber powder into grade A asphalt with good properties leads to a twofold increase in its softening temperature, while the frost resistance and elasticity of the asphalt concrete increase.

As laboratory studies have shown, this technology of introducing active rubber powder is not accompanied by the destruction of macromolecules, which provides quite satisfactory elastic properties of the road surface.

Fine-dispersed technical carbon from rubber, getting into bitumen in large quantities, became an additional source of crystallization centers, sharply

reducing the stability of binders, their resistance to aging and degradation of properties.

Conclusions

The work carried out has shown a significant advantage of asphalt concrete based on a composite bitumen-rubber binder in the construction of the upper layers of coatings in comparison with traditional hot asphalt mixtures. The data obtained allows that this research will be implemented in the construction of highways in areas where in summer the air temperature overheats more than 45-50 °C

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 PIF (India) = 1.940
 IBI (India) = 4.260
 OAJI (USA) = 0.350

SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal
Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 12.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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BISINGULAR INTEGRAL OF CAUCHY WITH SUMMABLE DENSITY

Abstract: It is obtained a Zigmund type estimate for the bisingular integral in the space of Summation functions. It is constructed an invariant functional space based on the inequality.

Key words: bisingular integral operator, Zigmund type estimate, invariant space.

Language: Russian

Citation: Absalamov, T. (2021). Bisingular integral of Cauchy with summable density. *ISJ Theoretical & Applied Science*, 11 (103), 428-431.

Soi: <http://s-o-i.org/1.1/TAS-11-103-41> **Doi:** <https://dx.doi.org/10.15863/TAS.2021.11.103.41>
Scopus ASCC: 2600.

БИСИНГУЛЯРНЫЙ ИНТЕГРАЛ КОШИ С СУММИРУЕМОЙ ПЛОТНОСТЬЮ

Аннотация: Получены оценки типа оценки Зигмунда для бисингулярного интеграла. На основе полученных оценок строится класс функций инвариантного относительно бисингулярного оператора.

Ключевые слова: бисингулярный интеграл, оценка Зигмунда, инвариантное пространство.

Введение

Классическая теорема об ограниченности сингулярного оператора с ядром Гильберта в пространстве L_p ($p > 1$)

$$\|\tilde{f}\|_{L_p[-\pi,\pi]} \leq A_p \|f\|_{L_p[-\pi,\pi]},$$

где $\tilde{f}(x) = \frac{1}{2\pi} \int_{-\pi}^{\pi} f(s) \cot \frac{s-x}{2} ds$, а A_p – постоянная зависящая лишь от p была доказана Н.Н. Лузиным [7] при $p = 2$ и М. Риссом [17] при $p > 1$.

В дальнейшем этот результат был перенесен в ряде работ для довольно широких классов

жордановых спрямляемых кривых. Подробная предистория этого вопроса имеется в работе [11] см., кроме того, А. П. Кальдерон [13],[14] и Давида [12].

Для изучения особого интеграла

$$\tilde{u}(x) = \int_a^b \frac{u(s)}{s-x} ds, \quad x \in (a, b) \text{ и}$$

($-\infty < a < b < +\infty$) с суммируемой плотностью в работе [5],[11] для функции $u \in L_p^{loc}(a, b)$ – множества функций, суммируемых в p -ой степени на любом внутреннем отрезке в интервале (a, b) , были введены характеристики

$$\Omega_p(u, \xi, \eta) = \left(\int_{a+\xi}^{b-\eta} |u(x)|^p dx \right)^{\frac{1}{p}}, \quad \xi, \eta > 0, \xi + \eta \leq b - a = l,$$

$$\omega_p(u, \delta, \xi, \eta) = \sup_{0 < h \leq \delta} \left(\int_{a+\xi}^{b-\eta-h} |u(x+h) - u(x)|^p dx \right)^{\frac{1}{p}}, \quad \xi + \eta + h \leq l, \delta > 0$$

и при $1 < p < +\infty$ доказаны оценки, $(\Omega_p(\tilde{u}), \omega_p(\tilde{u}))$, через $(\Omega_p(u), \omega_p(u))$.

В предельном случае при $p = \infty$ и $u \in C_{[a,b]}$ эти результаты были получены в [1], [8], было показано, что оценки [2] в определенном смысле

неулучшаемы. В [10] с помощью теоремы М.Рисса об ограниченном действии оператора \tilde{u} в пространстве $L_p(a, b)$, уточнены результаты, полученные в [1], [3].

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Одной из первых работ, посвященных повторному особому интегралу с ядром Гильберта

$$(Bf)(x_1, x_2) = g(x_1, x_2) = \frac{1}{4\pi^2} \int_{-\pi}^{\pi} \int_{-\pi}^{\pi} f(x+t, y+\tau) ctg \frac{t}{2} ctg \frac{\tau}{2} dt d\tau,$$

была работа Л. Чезари [15]. Он доказал, что если $f \in H_{(\delta_1^\alpha, \delta_2^\alpha)}^2$ то

$$g \in H_{(\delta_1^\alpha |\ln \delta_1|, \delta_2^\alpha |\ln \delta_2|)}^2$$

Следуя Л. Чезари, И. Е. Жак [6] в своей работе также показал, что класс функций $H_{(\delta_1^\alpha, \delta_2^\alpha)}^2$ не инвариантен относительно оператора B . В этой же работе доказано, что классы функций

$$H^{\alpha, \beta} = \{f \in C_{[-\pi, \pi]^2} : \omega_f(\delta_1, \delta_2) = O(\delta_1^\alpha \delta_2^\beta),$$

$$\omega_f(\delta_1, \delta_2) = O(\delta_1^\alpha \delta_2^\beta),$$

$$\Omega_{p,1}(u, \xi_1, \eta_1, \xi) = \left(\int_{a_1+\xi_1}^{b_1-\eta_1} \int_{a_2}^{a_2+\xi} |u(x_1, x_2)|^p dx_1 dx_2 \right)^{\frac{1}{p}},$$

$$\Omega_{p,2}(u, \xi_1, \eta_1, \xi) = \left(\int_{a_1+\xi_1}^{b_1-\eta_1} \int_{b_2-\xi}^{b_2} |u(x_1, x_2)|^p dx_1 dx_2 \right)^{1/p},$$

$$\omega_{p,1}(u, \delta, \xi_1, \eta_1, \xi) = \sup_{0 < h < \delta} \left(\int_{a_1+\xi_1}^{b_1-\eta_1-h} \int_{a_1}^{a_1+\xi} |u(x_1+h, x_2) - u(x_1, x_2)|^p dx_1 dx_2 \right)^{\frac{1}{p}},$$

$$\omega_{p,2}(u, \delta, \xi_1, \eta_1, \xi) = \sup_{0 < h < \delta} \left(\int_{a_1+\xi_1}^{b_1-\eta_1-h} \int_{b_2-\xi}^{b_2} |u(x_1+h, x_2) - u(x_1, x_2)|^p dx_1 dx_2 \right)^{1/p},$$

где $\xi_1 + \eta_1 + h \leq l_1$, $\delta > 0$.

Пользуясь [16-19] доказано

$$\omega_f^1(\delta_1) = O(\delta_1^\alpha),$$

$$\omega_f^2(\delta_2) = O(\delta_2^\beta), 0 < \alpha, \beta < 1\}$$

инвариантны относительно оператора B .

Рассмотрим бисингулярный интеграл вида:

$$\tilde{u}(x_1, x_2) = \int_{a_1}^{b_1} \int_{a_2}^{b_2} \frac{u(s_1, s_2)}{(s_1 - x_1)(s_2 - x_2)} ds_1 ds_2,$$

где функция

$$u \in L_p^{loc}(a_1, b_1) = \{u: \forall \xi_1, \eta_1 > 0, \xi_1 + \eta_1 \leq b_1 - a_1 = l_1, u \in L_p[a_1 + \xi_1, b_1 - \eta_1, a_2, b_2]\},$$

$$p > 1.$$

Введем характеристики

Teorema 1. Пусть $u \in L_p^{loc}(a_1, b_1)$. Тогда при сходимости соответствующих интегралов справедливо неравенства

$$\Omega_{p,i}(\tilde{u}, \xi_1, \eta_1, \xi) \leq C_p \left[\frac{1}{\xi_1^q} \frac{1}{\xi^p} \int_0^{\frac{\xi_1}{2}} \int_{\xi}^{l_2} \frac{\Omega_{p,i}(u, t_1, \frac{l_1}{2}, t_2)}{t_1^p t_2^{\frac{1}{1+\frac{1}{p}}}} dt_1 dt_2 + \frac{1}{\eta_1^q} \frac{1}{\xi^p} \int_0^{\frac{\eta_1}{2}} \int_{\xi}^{l_2} \frac{\Omega_{p,i}(u, \frac{l_1}{2}, t_1, t_2)}{t_1^p t_2^{\frac{1}{1+\frac{1}{p}}}} dt_1 dt_2 + \xi^{\frac{1}{p}} \left(\frac{1}{\xi_1^q} \int_0^{\frac{\xi_1}{2}} \frac{\Omega_{p,i}(u, t_1, \frac{l_1}{2}, l_2)}{t_1^p} dt_1 + \frac{1}{\eta_1^q} \int_0^{\frac{\eta_1}{2}} \frac{\Omega_{p,i}(u, \frac{l_1}{2}, t_1, l_2)}{t_1^p} dt_1 + \Omega_{p,i}(u, \frac{\xi_1}{2}, \frac{\eta_1}{2}, l_2) \right) \right],$$

$$\xi \in \left[0, \frac{l_2}{4} \right]$$

$$\Omega_{p,i}(\tilde{u}, \xi_1, \eta_1, \xi) \leq C_p \left[\frac{1}{\xi_1^q} \int_0^{\frac{\xi_1}{2}} \frac{\Omega_{p,i}(u, t, \frac{l_1}{2}, l_2)}{t^q} dt + \frac{1}{\eta_1^q} \int_0^{\frac{\eta_1}{2}} \frac{\Omega_{p,i}(u, t, \frac{l_1}{2}, l_2)}{t^q} dt \right],$$

$$\xi \in \left[\frac{l_2}{4}, l_2 \right]$$

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$$\omega_{p,i}(\tilde{u}, \delta, \xi_1, \eta_1, \xi) \leq$$

$$\leq C_p \left[\frac{\delta}{\xi_1 + \delta} \frac{1}{\xi_1^{\frac{1}{q}}} \int_0^{\frac{\xi_1}{2}} \int_{\xi}^{l_2} \frac{\Omega_{p,i}(u_1, t_1, \frac{l_1}{2}, t_2)}{t_1^{\frac{1}{p}} t_2^{\frac{1}{p}}} dt_1 dt_2 + \frac{\delta}{\eta_1 + \delta} \frac{1}{\eta_1^{\frac{1}{q}}} \int_0^{\frac{\eta_1}{2}} \int_{\xi}^{l_2} \frac{\Omega_{p,i}(u_1, \frac{l_1}{2}, t_1, t_2)}{t_1^{\frac{1}{p}} t_2^{\frac{1}{p}}} dt_1 dt_2 + \xi^{\frac{1}{p}} \omega_{p,i} \left(u, \delta, \frac{\xi_1}{2}, \frac{\eta_1}{2}, l_2 \right) \right],$$

где $0 < \delta \leq \min \{ \xi_1, \eta_1 \}$, $i = 1, 2$.

Обозначим через G класс пар положительных функций $(\varphi(\xi_1, \eta_1, \xi), \psi(\delta, \xi_1, \eta_1, \xi))$ определенных соответственно на множествах

$\{ \xi_1, \eta_1, \xi > 0, \xi_1 + \eta_1 \leq l_1 \}$, $\{ 0 < \delta, \xi_1, \eta_1, \xi, \xi_1 + \eta_1 \leq l_1 \}$ и таких, что $\varphi(\xi_1, \eta_1, \xi), \psi(\delta, \xi_1, \eta_1, \xi)$ почти убывает по ξ_1, η_1 и неубывающими по ξ (равномерно по остальным аргументам), $\psi(\delta, \xi_1, \eta_1, \xi)$ почти возрастает по δ (равномерно по остальным аргументам), $\frac{\psi(\delta, \xi_1, \eta_1, \xi)}{\delta}$ почти убывает по δ (равномерно по остальным аргументам), $\psi(\delta, \xi_1, \eta_1, \xi) \rightarrow 0$ при $\delta \rightarrow 0$.

Пусть $(\varphi, \psi) \in G$. Обозначим через $H_{\varphi\psi}^p$ множество функций из $L_p^{loc}(a_1, b_1)$ таких, что существует постоянные $C_1, C_2 > 0$, $\Omega_{p,i}(u, \xi_1, \eta_1, \xi) \leq C_1 \varphi(\xi_1, \eta_1, \xi)$

$$\omega_{p,i}(u, \delta, \xi_1, \eta_1, \xi) \leq C_2 \psi(\delta, \xi_1, \eta_1, \xi).$$

Множество $H_{\varphi\psi}^p$ в норме

$$\|u\|_{H_{\varphi\psi}^p} = \max \left\{ \sup_{\xi_1, \eta_1, \xi} \frac{\Omega_{p,i}(u, \xi_1, \eta_1, \xi)}{\varphi(\xi_1, \eta_1, \xi)}, \sup_{\xi_1, \eta_1, \xi} \frac{\omega_{p,i}(u, \delta, \xi_1, \eta_1, \xi)}{\psi(\delta, \xi_1, \eta_1, \xi)} \right\}$$

является банаховым пространством.

Множество тех $(\varphi, \psi) \in G$ для которых сходятся интегралы

$$\int_0^{\frac{l_1}{2}} \int_0^{\frac{l_2}{2}} \frac{\varphi(t_1, \frac{l_1}{2}, t_2)}{t_1^{\frac{1}{p}} t_2^{\frac{1}{p}}} dt_1 dt_2, \int_0^{\frac{l_1}{2}} \int_0^{\frac{l_2}{2}} \frac{\varphi(\frac{l_1}{2}, t_1, t_2)}{t_1^{\frac{1}{p}} t_2^{\frac{1}{p}}} dt_1 dt_2$$

обозначим через G_0 .

Теорема 3. Пусть $(\varphi, \psi) \in G_0$. Тогда оператор \tilde{u} действует из $H_{\varphi\psi}^p$ в $H_{\varphi\psi}^p$ и ограничен, где

$$\begin{aligned} \bar{\varphi}(\xi_1, \eta_1, \xi) &= \frac{1}{\xi_1^{\frac{1}{q}}} \int_0^{\frac{\xi_1}{2}} \int_{\xi}^{l_2} \frac{\varphi(t_1, \frac{l_1}{2}, t_2)}{t_1^{\frac{1}{p}} t_2^{\frac{1}{p}}} dt_1 dt_2 + \frac{1}{\eta_1^{\frac{1}{q}}} \int_0^{\frac{\eta_1}{2}} \int_{\xi}^{l_2} \frac{\varphi(\frac{l_1}{2}, t_1, t_2)}{t_1^{\frac{1}{p}} t_2^{\frac{1}{p}}} dt_1 dt_2 \\ \bar{\psi}(\delta, \xi_1, \eta_1, \xi) &= \frac{\delta}{\xi_1 + \delta} \frac{1}{\xi_1^{\frac{1}{q}}} \int_0^{\frac{\xi_1}{2}} \int_{\xi}^{l_2} \frac{\varphi(t_1, \frac{l_1}{2}, t_2)}{t_1^{\frac{1}{p}} t_2^{\frac{1}{p}}} dt_1 dt_2 + \\ &+ \frac{\delta}{\eta_1 + \delta} \frac{1}{\eta_1^{\frac{1}{q}}} \int_0^{\frac{\eta_1}{2}} \int_{\xi}^{l_2} \frac{\varphi(\frac{l_1}{2}, t_1, t_2)}{t_1^{\frac{1}{p}} t_2^{\frac{1}{p}}} dt_1 dt_2 + \xi^{\frac{1}{p}} \psi(\delta, \xi_1, \eta_1, \xi) \end{aligned}$$

Обозначим через H_p класс пар положительных функций $(\varphi(\xi_1, \xi), \psi(\delta, \xi_1, \xi))$, удовлетворяющих условиям:

$$1. \frac{1}{\xi_1^{\frac{1}{q}}} \int_0^{\xi_1} \int_0^{\xi} \frac{(t_1 t_2)^{\frac{1}{q}} \varphi(t_1, t_2)}{t_1 t_2} dt_1 dt_2 = O \left((t_1 t_2)^{\frac{1}{q}} \varphi(\xi_1, \xi) \right)$$

$$2. \psi \left(\delta, \frac{\xi_1}{2}, \frac{\xi}{2} \right) = O(\psi(\delta, \xi_1, \xi))$$

$$3. \frac{\delta}{\delta + \xi_1} \varphi(\xi_1, \xi) = O(\psi(\delta, \xi_1, \xi)),$$

где постоянные в "O" отношениях не зависят от δ, ξ_1, ξ .

По определению $(\varphi, \psi) \in G_0 H_p$, если $(\varphi, \psi) \in G_0$ и

$$\left(\varphi \left(\xi_1, \frac{l_1}{2}, \xi \right), \psi \left(\delta, \xi_1, \frac{l_1}{2}, \xi \right), \varphi \left(\frac{l_1}{2}, \xi_1, \xi \right), \psi \left(\delta, \frac{l_1}{2}, \xi_1, \xi \right) \right) \in H_p \left(0 < \xi, \xi_1 \leq \frac{l_1}{2} \right).$$

Теорема 4. Пусть $(\varphi, \psi) \in G_0 H_p$. Тогда оператор \tilde{u} действует в $H_{\varphi\psi}^p$ и ограничен.

Доказательство этого утверждения следует из теоремы 3 и определения класса $G_0 H_p$.

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PIF (India) = 1.940
IBI (India) = 4.260
OAJI (USA) = 0.350

SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 12.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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PHILOLOGICAL COMPARATIVISTICS: CONTENT AND SIGNIFICANCE

Abstract: Comparative literature or literary comparative studies is a branch of science based on the comparison of two or more literary phenomena. The future of comparative literature is one of the directions of science, when international social, cultural and literary relations are developing day by day. Any comparative study identifies common and specific aspects of literary phenomena, which serve as the basis for the emergence of general theoretical laws in literature. The aim of the research work is to provide students, masters and all researchers with theoretical information on the methodology of comparative studies, comparative literature, to explain the methods of comparative research. In addition, the purpose of comparative literature is to determine the typological and genetic nature of literary events, literary heritage of writers, literary schools, genres, etc. regardless of whether it is a historical phenomenon or a specific historical fact and to demonstrate the internal laws that apply to a literary event.

The object of the study is the comparative historical method, the basic concepts; macro and micro comparability; it aims to provide theoretical knowledge about East-West literary relations, translation criticism, criteria for comparative analysis of a literary text, and to develop researchers' skills to compare and contrast literary events.

Students, masters and researchers will be able to explain the methodology of comparative research and its basic concepts; knowledge of the basic literature on comparative literature; have a general idea on the translation, types of translation, translation criticism, a certain knowledge of the comparison of the original and the translation; have the skills to identify general and specific aspects of literary events through comparison, to analyze the issues of poetics, literary relations and literary influence.

Key words: comparative studies, comparative literature, comparative-historical method, object, stages of comparison, environment, internal features, typical situations, macro-comparativistics, micro-comparativistics, research method, empirical and theoretical methods, methodology of comparative analysis, comparative synthesis, comparative induction, comparative historical and comparative method, evaluation criteria, results of comparative analysis.

Language: English

Citation: Khalliyeva, G. I., & Turaeva, B. B. (2021). Philological comparativistics: content and significance. *ISJ Theoretical & Applied Science*, 11 (103), 432-439.

Soi: <http://s-o-i.org/1.1/TAS-11-103-42> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.11.103.42>

Scopus ASCC: 1200.

Introduction

Comparative studies (lot.comparativus — comparative) is a field of science based on the comparative study of various processes, which

includes language and literature along with other areas. The term was first coined in France (“littérature compare”, 1817), then in England (“Comparative literature” in 1886), in Germany (in the name of the

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magazine “Zeitschrift für vergleichende Literaturgeschichte”, 1887–1910), in Russia (1889 in the research of A.N.Veselovsky.) began to be used.

The direction of comparative research in the field of language and literature is called philological comparative studies. Philological comparative studies consist of two major groups:

1. Linguistic comparative linguistics, i.e. comparative linguistics.

2. Literary comparative studies, i.e. comparative literature.

Linguistic comparative studies aim at the comparative study of languages that are close and not close to each other in different directions. “The study of languages from a comparative point of view, their historical approach, has laid the foundation for the emergence of comparative-historical linguistics, the firm recognition of linguistics as a separate, independent science” [13, p.291].

Discussion

Features of literary comparative studies. The literary process is the **object** of literary comparative studies, and all issues related to the study of fiction (e.g., *plot and composition, content and form, language of the work of art, writer’s style, etc.*) constitute the subject. *Synthesism, mentality, receptive aesthetics, intertext, paratext, metatext, hypertext, architecture, imagology, inheritance, semiotics, typology, motive* and other terms are the basic concepts of comparative literature (*given in the glossary*).

As noted in the scientific literature, the following literary phenomena can serve as objects for comparative studies: The original and translation of a work; Poetics of the work: plot, composition, language of the work, motives, skill of writers, etc. The views of other peoples on the literature of another people, the literary reception (the process of acceptance of the literature of other people) are also the object of comparative literature (*For example, “Navoi in the eyes of the Russian reader” or “Pushkin and Uzbek reader”, “The Japanese who dedicated their lives for learning Fitrat”*). Different views of scholars on the same work of art (for example, the scientific research of Uzbek, Russian, Japanese, German scholars on “Boburnoma”), international literary relations, issues of interaction, tradition and innovation, the question of the influence of different types of art (*music, painting, sculpture, cinema*) on literature, and so on.

Orientalist N.I. Konrad (1891-1970) draws attention to the five aspects that can be the object of comparative literature: 1. Comparison of national literatures with historical commonalities (e.g. Persian and Tajik). 2. Comparison of typological features in the literature of different peoples (e.g., classical realism of the XIX century). 3. Comparison of the literature of peoples in different places and times (e.g.,

Russian and Uzbek). 4. A comparison of literature with typological features that are not related to each other (e.g., chivalrous novels and Japanese military epics). 5. Comparison of international literary relations. At this point, the scholar emphasizes literary influence and literary connections [10, p.32-33].

V.M.Zhirmunsky (1891-1971) noted that the comparative study of the writer's work with the national and international literary traditions that influenced him is also great methodological importance, helping to determine the writer's creative individuality, his place in the development of national and world literature [7, p.183].

In the monograph published in Germany, the science of comparative studies divided into 4 groups, such as 1) “Comparative studies of literary theory Dichtungs- / Literaturtheorie”, 2) “Comparative studies of literary history” 3) “Comparative intermedial research (comparative Intermedialitätsforschung / Comparative Arts)”; 4) “Comparative culture (comparative Kulturwissenschaft)”. At this point, the authors put forward the theory that every phenomenon related to literature can be studied from a comparative point of view [5, p.405].

Furthermore, according to the theory of comparative studies, the literary process can be compared through two different approaches:

1. Historical genetic approach to the literary process (*literature of the same or similar peoples in terms of origin*)

2. Comparative typological approach to the literary process (*literature of peoples with commonalities, regardless of origin*) for example, external themes in the literature of different peoples, traditional heroes, genres, literary trends.

In terms of comparative study of the literature, comparativeism is divided into two major groups.

1. Macrocomparativism – a comparative analysis of literary phenomena within different genetically unrelated nations (*for example, the works of Shakespeare and A.Navoi*).

2. Microcompatibility – a comparative analysis of literary phenomena belonging to one nation or region (*for example, the works of A.Qahhor and O'.Hoshimov, A.Yassavi and Makhtumkuli*).

A comparative study of the scientific work of literary scholars can also be the object of macro or microcompatibility. E.E.Bertels (1890-1957) and A.N.Malekhova (1938-2009) are Russian scientists who lived and worked in different places at the same time. Their scientific research on the same work, Alisher Navoi's epic “Lison ut-tayr”, requires a comparative study, showing the evolution and perfection of ideas, as well as the identification of differences and commonalities. This is the object of microcompatibility. Based on a comparative study of the scientific views of both orientalists, the following conclusions can be drawn [15, p.133-134]:

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1. In the research of E.E.Bertels (1928) and A.N.Malekhova (1978) the balance of hermeneutic doctrine was not disturbed, the essence of the text was not sacrificed for transient ideas and ideological interests. It is difficult to say this about E.E.Bertels' research in the 1940s, because the policy of repression forced the scientist to reckon with the ideology of the time; The plot of the work of both orientalists, Navoi's connection with mysticism, the reason for choosing the nickname Foni, his views on Eastern Nazism are almost synonymous. For example, on the subject of Navoi and mysticism, E.E.Bertels notes that the poet was deeply acquainted with the teachings of mysticism, but was not a Sufi practitioner. A.N.Malekhova also emphasizes that mysticism was not a goal for the poet, but a means.

2. E.E.Bertels approaches the issue from the historical-biographical point of view, A.N.Malekhova from the structural-systematic point of view. The scientist analyzes the essence of the stories in the political, socio-cultural context, down to the smallest elements, and A.N.Malekhova focuses on the study of the internal composition of the work, the identity of the author, the typology of stories.

3. Both studies essentially complement each other. The evolution of views of E.E.Bertels and A.N.Malekhova shows that the epic "Lison ut-tayr" can be studied in different aspects and duration.

Results

Comparative literature as a science. It is known from the history of science that the first theoretical ideas about comparative literature were formed in Europe in the early nineteenth century and in Russia in the second half of the nineteenth century due to the need to explain the similarities and differences of literary processes [1].

Comparative research was initially conducted in the field of linguistics and later had its impact on literature as well. A special contribution to the development of the comparative-historical method was made by European linguists such as Franz Bopp, Rasmus Rusk, Jacob Grimm, who emerged as innovative linguists [13, p.81].

The first theoretical comparative ideas were formed in Germany. The German historian I.G.Gerder. The research and works of Gerder (1744-1803) and the great writer I.V.Goethe (1749-1832) were created in a comparative direction. I.G.Gerder focuses primarily on the general aspects of the cultural life of the peoples of Europe. The great writer I.V.Goethe, who continued his ideas, introduced the concept of "world literature" to science. The uniqueness of culture, especially the commonalities of Eastern and Western culture that make up world literature, is embodied in its West-East desk.

The comparative-historical method in Russian oriental studies is associated with the name of the Russian historian and theorist A.N.Veselovsky (1838-

1906). The scientist was the first to use this term in science. "The comparative-historical method is based on the laws of development of socio-historical development in the study of the universal literary process. Because the historical process has its own characteristics within each geographical region, it also has a number of general laws, on the basis of which it is possible to study the literature of different peoples in a comparative aspect" [16, p.24]. A.N.Veselovsky approached the issue on the principle of historicity. For example, in 1859, a German scholar criticized G.Floto's article on "Divine Comedy": "It is difficult to imagine a writer without time; Dante's creative legacy is not only Dante's, but also the role of time" [1, p.211]. In his view, the history of literature is the history of social thought, culture and science, and the personality of the poet is shaped by certain historical conditions.

A.N.Veselovsky summed up all his ideas and created the work "Historical Poetics" based on a comparative methodology [4, p.405]. According to the Russian scholar M.G.Bogatkina, the methodology of modern comparative studies is based on the traditions of the comparative-historical school created by A.N.Veselovsky and consists of a set of comparative methods of studying the text [3, p.75].

In short, the comparative-historical method [8, p.38-46], which is the main method for comparative research, helps to fully understand the dynamics of the literary process, the exchange of inheritance and traditions, artistic values.

Methodological aspects of literary comparistics after A.N.Veselovsky were studied by scientists such as V.M.Zhirmunsky, A.Dima, D.Dyurishin, N.I.Konrad, I.G.Neupokoeva, M.B.Khrapchenko, A.Kokorin, M.Bogatkina, V.R.Amineva, Yu.I.Mineralov and are still being studied today.

Today, the science of comparative literature is developing day by day. Continuing the tradition initiated by American scientists W.Frederick (President of the International American Association of Comparativists) and Rene Wellek, comparative scientific centers and schools are being established in various scientific centers around the world. These include the Moscow School of Comparative Studies and the British and American Comparative Literary Associations [18].

Several scientific journals on comparative literature are currently published in the world. Imagology and Comparative Studies in Russia, Historical Poetics, and Revue de literature Compare in France are among such prestigious journals that publish the best articles on comparative studies [18].

Scientific theoretical fundamentals of comparative analysis

Comparative analysis is different from simple analysis. Traditional analysis consists of objects, and they are their constituents. For researchers, it is

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enough to know this. Comparative analysis, in addition to the above-mentioned actions, also focuses on comparing the components of the objects of analysis with each other.

The purpose of comparative analysis is to identify similarities and differences between comparable objects.

From time immemorial, our people say, "The truth is known by comparison". That is why the methodology of comparison is widespread and used in people's life activities. Today, the process of comparison is introduced into the mechanism of cognition and event analysis. The methodology of comparison is used in all areas of science and practice.

There is a certain scientific and practical basis for a deeper understanding of the content, essence and functions of the methodology of comparison.

The objects of comparative analysis are divided into natural, social, and spiritual objects. These three relatively independent groups of events are interconnected. They form the environment in which a person lives and are reflected in fiction, becoming an image.

Despite the relative independence of natural phenomena, they become objects of comparison only after they are involved in human social life. In other words, because people are engaged in a comparative analysis of natural phenomena, they assimilate their social characteristics into it based on their own interests and views. As a result, the comparative analysis of natural phenomena becomes somewhat socialized. Thus, there can be no mechanism for comparing natural phenomena without the influence of social factors

The second group of objects of comparative analysis consists of **social phenomena**. The method of comparing them has its own characteristics. At the same time, the area of analysis expands, the number of comparative analysis indicators increases. The reason is that the laws of social development, all groups of social relations: economic, political, spiritual-ideological, legal, scientific-technical, information, military, ecological and many other relations are taken into account here.

Spiritual-ideological issues constitute the third group of objects of comparative analysis. The depth and accuracy of the comparative analysis of the objects of the spiritual-ideological sphere leads to a positive result.

Hence, the natural, social, and spiritual-ideological phenomena that exist in fiction are the objects of comparative analysis. But these objects are unique and require consideration of a number of their features.

Tasks of comparative analysis

According to the interpretation in the scientific literature, in the process of comparative analysis such tasks as gnoseological, logical, methodological, methodical, axiological are performed [11]. In other

words, we go through these stages in the process of comparing literary events.

The epistemological function of comparative analysis. Its essence and main purpose are to gain new knowledge and skills about the objects of comparison. Through this we achieve the following results:

First, in the process of comparative analysis, we obtain new information

about each object being compared.

Second, we gain new insights into the interaction of comparable literary events.

Third, if the process of comparing objects is sufficiently complete and precise, then we will have information about their past, present, and future. At the same time, we enrich the theory of comparison methodology.

The logical function of comparative analysis.

Expression of logical law rules in the process of comparing literary events. In order not to deviate from the requirements of logic in the process of comparative analysis, the following should be observed:

1. It is illogical to compare literary events with different bases. Often different bases are chosen for the comparative analysis of literary events. When this happens - the process of comparison loses its accuracy, it is in many respects without subject, and therefore ineffective. There should be clear and unambiguous grounds for comparison. What is right cannot be compared to another. For example, if we take a plot, with a plot, if we take the language of a work, it is logically correct to compare it with the language of another work;

2. The expected result cannot be achieved unless certain situations that are not related to the objects are excluded from the analysis;

3. In the process of comparison, one may encounter contradictions, contradictions, one should not be afraid of them. Even in the contradictory characters, there are certainly commonalities that do not contradict logic.

The methodological task of comparative analysis. In the comparison process, we use many methods and techniques. This increases not only our knowledge of the object, but also our empirical knowledge, i.e. our experience in solving some problems in life, and expands our practical possibilities

The task of worldview in comparative analysis. It is known that every process takes place depending on people's knowledge and worldview. The breadth of a comparative analysis depends on the extent to which a person has a worldview, knowledge, and level. Therefore, worldview plays an important role in this process. The worldview of the subjects serves to enrich the worldview of the public.

The evaluative (axiological) function of comparative analysis is manifested in many forms, in many respects. Whatever we do not compare, of

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course, in the conclusion we conclude our scientific theoretical views and evaluate this or that literary phenomenon. Therefore, comparative analysis is essentially axiological, that is, in its content the value of the events being compared in terms of their similarities and differences is concentrated. This not only enriches the theoretical framework, but also plays a practical role in solving some problems.

The empirical task of comparative analysis is mainly focused on ensuring the solution of practical problems. Every day we face a series of practical issues. Only when comparative analysis serves practice and is important in a person's life will it be truly productive.

The most important stages in the comparison process

In order for a comparative analysis to yield the expected result, at what stages should the researcher work?

First of all, the researcher must select the objects of comparison correctly. Because, the state of existence of the objects of comparison creates these stages.

First, it is impossible to compare, identify similarities and differences between events without comparing their internal properties, internal parameters. Their main ones are the content, essence, qualities of the objects being compared. Therefore, identifying similarities and differences in the content, nature, and qualities of events is the first step in the comparison process.

Second, it is well known that the internal features of events, that is, their content, essence, qualities, are manifested in the environment. It follows that it is necessary to study the similarities and differences in the ways in which the internal properties of the objects of comparison are manifested in the environment. This is the next stage of the comparative analysis.

Third, not only do the objects being compared affect the environment, but the environment also affects them. This involves comparing the characteristics of the impact of external conditions on the objects of analysis. In this way, a third direction is naturally determined at the stage of comparing events. Its essence is to identify similarities and differences in the impact of the environment on the objects of comparative analysis.

Fourth, there will be a reason, a necessity, for the occurrence of any event, including a literary event. Of course, they should be taken into account when comparing. Many needs play a role in the origin, existence, development, and functioning of each event and some of them are of paramount importance. We often call this a **motive** in the literature. Therefore, before we do a comparative analysis of what we need, we also need to compare the needs and wants that make it happen. This helps us to identify similarities and differences in the reasons for the existence of

objects being compared. To do this, we need to perform a comparative analysis in the literature on the algorithm of **necessity (motive) - object-essence (result)**.

Thus, the comparison of needs can be considered as an important link in the mechanism of **object** analysis that we need. Because nothing happens without need and necessity. If we recall, Alisher Navoi's "Lison ut tayr" the first of the 7 valleys chosen for the original destination was need [19].

Typical situations that can be compared

Sometimes when we have so much material on hand, we don't know what to compare or compare with what. It is known that the process of comparative analysis, its results are influenced by many factors. These are the contents of the objects of comparison; methodological tools in the analysis; methods of comparative analysis, etc. With all of this in mind, the following typical situations can be compared.

The first situation is to compare the events of a literary event that exist in a space and time. Such a comparison mechanism has its own characteristics. First, the spatial unity of the objects being compared, the generality of the environment, removes from the agenda the study of how it affects these properties. The general space and time, on the other hand, indicate that the environment of the objects of comparison is the same, and that this environment has essentially the same effect on them. This leads to a slight "simplification" of the comparative analysis. Second, the existence of comparable phenomena in one space and one time allows us to speak of their natural-historical unity. For example, a comparative study of the works of **Utkir Hoshimov and Tohir Malik** reveals the general and specific aspects of writers who lived and worked in the same place and time.

The second situation. It is a space, but a comparison of literary events from different eras. A second situation arises when it is necessary to compare literary events that exist, exist, or may exist in a given environment, in the same space, but at different times. However, comparing events that occur at different times but in very similar situations is a difficult task. Usually, certain problems, difficulties, puzzles occur here.

Often, they try to compare events that take place in the same space, for example, in the context of a country, by negating the time factor. This is wrong: for example, poets who lived and worked in the same place but at different times: Muqimiy and Muhammad Yusuf's views on youth will certainly be judged by time. In other words, if the objects being compared exist in the same environment, it is impossible not to take into account that it affects them differently at different stages of its development. Even if the conditions under which the events took place (country, any place) have not changed radically, the

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objects of comparison themselves may have changed during this time.

The third situation. Comparing objects that existed in the same time but in different places. For example, the Uzbek writer Nasir Zokhid and the American writer Victoria Schwab, who live and work in the same time but in the same place, have a novel of the same name, *Revenge*. At this point, it is important to take into account the effect of the environment on the objects of comparison when comparing the motive of revenge in both novels. This process requires special attention from the researcher. Because in the process of comparative analysis it is necessary to take into account the influence of conditions, causes and bases on comparable phenomena.

Thus, the simultaneous existence of objects of comparative analysis cannot be a basis for ignoring the characteristics of the environments in which they live and develop. The reason is that if this is done, the comparison will not give the expected result.

The fourth situation. The process of comparing literary phenomena of different space and time. It compares different environments, different places, and literary events of different times. This situation is considered to be the most complex for the methodology and methodology of comparative analysis. For example, in order to study the interpretation of enlightenment in the works of Shakespeare and Alisher Navoi, or in the works of Abdullah Kahhar and Jack London, it is necessary to take into account the following:

Firstly, it is necessary to understand the nature of the events being compared. *Second*, it is necessary to examine as deeply as possible the previous conditions and environments in which the objects of comparative analysis exist, revealing their influence on the worldview of Shakespeare and Navoi or Abdullah Kahhar and Jack London. Because in order to know what unites the works of writers who lived and worked in different times and places, other than popularity, it is necessary to reveal many literary events.

Due to the spatial-temporal parameters of the comparison objects, many difficulties arise in the path of the analyst. However, given the characteristics of the situations that arise during the development of comparable phenomena, they can be solved. Practice has shown that a comparative result is more effective if researchers conducting a comparative analysis understand these difficulties and have a methodology and methodology for comparing different, conflicting events.

Methodology of comparative analysis

Comparative analysis is one of the stages of methodology for knowing and changing the phenomena in existence. The methodology of comparison forms the basis for comparing different processes that exist in a particular space and time.

Therefore, there is a need to determine the place of comparative analysis in the methodology.

It is well known that methodology is the doctrine of scientific research methods. In all disciplines, research methods are divided into empirical and theoretical methods. It is on the basis of empirical and theoretical methods that every science, including literature, forms its own research methods. "Without research methods, no science can achieve its goal (strategy), to reveal the essence of the object of research. Because this or that science can determine the phenomena of nature and society, find their own laws, generate scientific and philosophical ideas about them, of course, through certain methods" [13, p.291].

The empirical method involves observation and experimentation and consists of steps such as **planning, description, and statistics**.

Theoretical methods include analysis, synthesis, abstraction, induction, deduction, analog modeling. All theoretical methods go through the following stages: **comparison, generalization, classification, evaluation**.

Hence, it is clear that comparison is one of the main stages of all theoretical scientific conclusions. Therefore, before performing a comparative analysis, it is necessary to thoroughly study the research methods, to understand their role in comparison.

We briefly explain the theoretical methods: **Analysis, synthesis** - summarization, **abstraction, induction** - transition from general to specific, **deduction** - transition from specific to general, **analogy** - analysis of similar features, **modeling** (*creation of a prototype: e.g.: artistic model of the universe, textbook electronic model*). Each of these theoretical methods can go through a comparison phase. In comparative analysis, analysis, synthesis, deduction and induction are necessary elements, without which it is impossible to carry out comparative analysis. For example, deduction is the process of dividing events into organizers, and comparative analysis includes the results of this process [17].

Hence, comparative analysis shows its influence on all theoretical methods aimed at knowing and changing real-life events. From this, concepts such as comparative synthesis, comparative induction, and comparative deduction are formed. For example, **comparative synthesis** is the process of identifying similarities and differences between events. It is based on the results of the integration of knowledge in the elements that make them up. In essence, comparative synthesis answers the question, "What is the difference between the objects of comparative analysis?" **Comparative induction** is the process of identifying similarities and differences between comparable literary phenomena, based on the movement of knowledge from the particular to the general.

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Comparative-historical and comparative-comparative method

The comparative-historical and comparative (or contrastive-comparative) method is one of the most basic methods in the methodology of comparison. These methods are essentially close to each other, but different.

The comparative-historical method is a method of comparing the general and specific aspects of literary events in relation to the process of historical development. The first theoretical ideas based on the comparative-historical method are described in Aristotle's Poetics. The philosopher compares literature in the process of dividing it into three types, such as epic, lyric, and drama, and explains their essence. There are many theoretical ideas about the comparative-historical method in the scientific literature. In particular, the literary critic B. Karimov notes that using the comparative-historical method, it is possible to conduct research in the following areas:

1. Masterpieces of world literature or the beauty of national literature samples are compared with each other;
2. Comparative study of literary works according to the period of their creation;
3. Study of comparative works of representatives of one national literature;
4. Samples of national literature are examined in the context of world literature;
5. Different and similar aspects of the literary process or existing literary events in the history of literature are explored;
6. Works of writers who are close in terms of topic or scientific problem are examined [9, p.74].
7. In the study of literary-aesthetic evolution, the works written by a particular writer are taken as objects.

Such scientists as A.N.Veselovsky, V.M.Zhirmunsky, N.I.Konrad, A.Dima, A.Dyurishin, and V.R.Amineva very well cover the theoretical foundations of the comparative-historical method [8, p.39].

Contrastive method is a systematic comparison of philological phenomena-based method, mainly to reveal different feature is a focused method. That is why in linguistics it's called so.

Although theoretical foundations have not been developed, works have been created since ancient times to compare different philological phenomena. Alisher Navoi's work "Muhakamat al-Lughatayn" on the discussion of Persian and Turkic languages is a vivid example of contrastive method. The linguist I.A.Baudouin de Courtenay created the theoretical basis of this method in science in the 19th century. Scientists like E.D.Polivanov, L.V.Shcherba, S.I.Bernstein, A.A.Reformatskiy, Sh.Balli have continued to work on this field [12].

According to the linguist R.Rasulov, contrastive method is a method of construct of two or more related

or unrelated languages - linguistic phenomena, which differs from the comparative-historical method, which is studied only by comparing and contrasting related languages. In addition, unlike the comparative-historical method, it does not pay attention to the history of the languages being contrasted, their origins - genetic aspects, development, and does not rely on them.

If we apply the above theoretical ideas to the literature, the analysis is carried out within the literature of one nation or one region, focusing on the genetic aspects of literary events, including the comparative-historical method. For example, "comparison of symbols in Uzbek classical literature", research and analysis of literature based on (e.g. Russian and Uzbek, English and Spanish) we will use the contrastive method if the specific features of this or that literary phenomenon are revealed [13, p.263].

Criteria for evaluating the results of comparison

The evaluation of the comparison results depends in many respects on the extent to which the comparative analysis tasks discussed above have been performed. There are historical, epistemological, logical, methodological, spiritual-ideological and other criteria for an objective assessment of the results of comparisons in the scientific literature. To get a clearer picture of them, let's look at some of them.

A historical criteria is an assessment of how well the results of a comparative analysis correspond to historical facts.

The epistemological criteria are to evaluate the results of this comparative analysis in terms of their conformity to the laws and principles of the theory of knowledge.

The logical criteria are to assess the compliance of the results of the comparative analysis with the requirements of the laws of logic.

The methodological criteria are the evaluation of the results of the comparative analysis in terms of compliance with the choice and order of use of methodological tools.

The spiritual-ideological criteria are to evaluate the results of the comparative analysis, taking into account the extent to which the spirituality of society corresponds to the ideological goals.

In short, the above criteria allow us to evaluate the results of comparative analysis, to determine the scientific and theoretical aspects of comparative research.

Conclusion

Conditions for ensuring the objectivity of the results of comparative analysis

In order to achieve fair and objective results in the comparative analysis, it is necessary to pay attention to the following:

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First, researchers who want to perform a comparative analysis need to know the **theoretical, methodological, and methodological foundations of its implementation**. In this regard, they should be able to effectively use the opportunities of theoretical and empirical means of knowledge.

Second, the objects of comparative analysis must take into account the characteristics of the environment in which they exist, exist, or may exist. In other words, the researcher must analyze all the circumstances that may affect the process of comparative analysis.

Third, comparison should not be limited to the collection and display of statistical data. The objects of comparison are constantly changing, and researchers need to consider this. The statistical picture of the studied objects must be supplemented with their dynamic features, showing their gradual perfection; otherwise, the comparative truth cannot be

complete and objective. Therefore, the statistics should be analyzed and interpreted along with the dynamics.

Fourth, avoid subjectivism in analysis. False comparisons may serve certain interests, but they do not serve the development of science. The fact that some researchers compare philological aspects that do not correspond to each other at all leads to such a false comparison. As a result, the content and results of the comparative analysis are distorted, and misconceptions emerge in people's social consciousness. For example, comparing Otabek's romantic adventures in Abdulla Kadiri's "By gone days" with George Byron's Don Juan's romantic adventures does not give the expected result.

Hence, when the basic rules and requirements of comparative analysis are not met, the process of comparing literary events gives unbiased results.

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SOI: [1.1/TAS](https://doi.org/10.15863/TAS) DOI: [10.15863/TAS](https://doi.org/10.15863/TAS)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 12.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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INCREASING THE EFFICIENCY OF FIBER CLEANING ON STRAIGHT FIBER CLEANERS

Abstract: The article presents the results of experimental studies of the ways to increase the efficiency of cleaning cotton fiber in direct-flow fiber cleaners.

Key words: fiber cleaner, fibers, serrated cylinder, lap, grate, brush, gauge.

Language: English

Citation: Khojimatov, R. S., & Dadaboyev, F. M. (2021). Increasing the Efficiency of Fiber Cleaning on Straight Fiber Cleaners. *ISJ Theoretical & Applied Science*, 11 (103), 440-443.

Soi: <http://s-o-i.org/1.1/TAS-11-103-43> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.11.103.43>

Scopus ASCC: 2200.

Introduction

Cotton has a special place among industrial crops, since the products obtained as a result of its processing are used in a wide variety of industries. Scientific professors R.V. Korabelnikov, E. T. Maksudov, Kh.K. Tursunov, D. Ya. Yakubov, Kh.T. Akhmadkhuzhaev, R. Muradov and others have developed and created a number of different highly effective gins equipped with a new device for fiber cleaning [1-7].

The Main Part

In ginneries, raw cotton is used to produce fibre, seeds, lint and fibrous waste. In addition, cotton lint and fibrous waste are used to produce: cotton for clothes and hygroscopic, cellulose, nitrocellulose, cellulose acetate and many other types of products and articles mixed with other types of raw materials. In general, about three hundred types of products are obtained from cotton in combination with other types of raw materials. To isolate trash impurities from cotton fiber, and this is one of the main technological operations in the technological process of the cotton ginning industry, a large number of machines and fiber cleaners of various types have been created and are operating [8-11]. To clean the fiber from the

constructed impurities, after the gins, direct-flow fiber-cleaners of the ZOVP and IVP types are sequentially installed, where the main release of vices and trash impurities into waste occurs with a simultaneous loss of fiber. The fibrous portion of the waste consists of loose fiber, fibrous beetle, and soft blemishes. On straight-through three-stage fiber-cleaners of the ZOVP and IVP types, the cleaning effect, according to the passport data, is up to 40%. In fact, it does not exceed 30% and depends on the type of raw cotton being processed, its initial cotton waste and moisture content [12-17]. The low cleaning effect of direct-flow fiber-cleaners depends on a number of reasons inherent in the existing design. Such reasons include the following:

– when cleaning a fiber, first of all, it is necessary to create a condition for the cotton waste and damaged fiber to be on its surface, that is, on the surface of contact with the debris-striking surface. This can be achieved only by the formation of parallel-embedded fibers, i.e. the formation of its lap. Having already parallelized the fiber, it can be divided into strands without damaging them, relative movement can easily separate i.e. parallel fibers from each other.

– thickness of a lapping of cotton fibers, separated on the surface of the saw cylinder, is

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commensurate with the gap between the teeth of the saw cylinder and the gridiron;

– the location of the strand of fibers on the surface of the saw cylinder is chaotic, which makes it possible for some of the fibers to leave in transit with air through the space between the sawing, bypassing the gridiron;

– when air with fiber is supplied through the intake throat to the first cylinder in the zone of interaction of the strand of fibers with the toothed surface of the saws, the effect of aerodynamic cleaning occurs. The debris released in this case moves in the direction of the air flow and again enters the fiber.

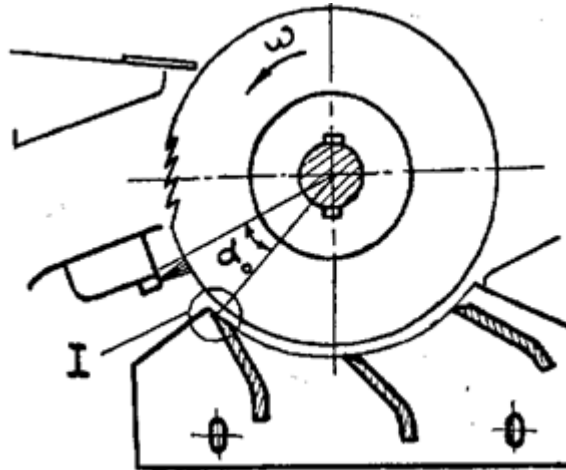


Fig. 1. Fiber cleaner type 1VP

It is known that the cleaning effect of an aerodynamic cleaner reaches 15%, i.e. if the design is changed in the direction of application of aerodynamic cleaning, then only due to this it is possible to increase the cleaning effect by 10-15% [18-22]. From the research carried out, it can be seen that the lap on the saw cylinder is formed from randomly located strand of fibers. We have found that from the standpoint of the probabilistic picture, up to 85 per cent of the strands of fibers will rely on 2 or more saws.

The essence of the division process lies in the fact that under the influence of the divider, the process of pulling apart the strand of fibers fixed on the saw teeth occurs. Moreover, a part of the strand that has a stronger bond with one of the teeth will remain on this tooth, and the sections of the fibers that have a less strong bond with other saws, sliding from them, and

as a result, the strand will be fixed on one of the saws. The process of dividing the lap into strands for our case should be considered from the position of the necessary movement of the divider relative to the saw cylinder, in which the strands are divided, i.e. fixing them on one saw and removing them from the teeth of other saws.

In this case, two cases of the arrangement of the strands of fibers on the saw cylinder are characteristic:

1. A strand of fibers is attached to one saw. This is the simplest case, in which the division process does not occur, and the interaction of the branches of the strand with division ensures the scraping of trash impurities from them (Fig. 1, a).

2. A strand of fibers is fixed on several saws and is positioned arbitrarily (Fig. 1, b). For simplicity, we will consider the strands as straight-line segments.

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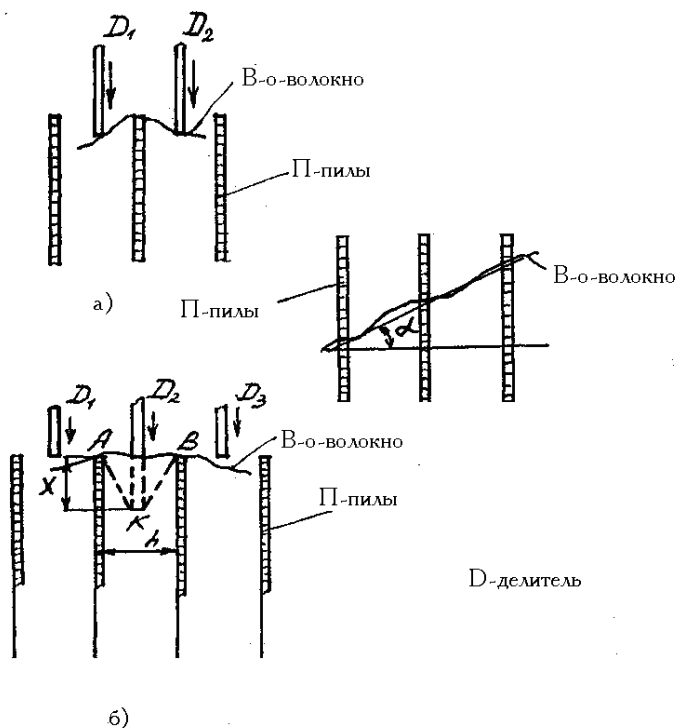


Fig. 2 Diagram of the process of splitting a lap of fiber

For example, a fiber strand of length l is fixed on two saws at an arbitrary angle to the generatrix of the saw cylinder. Then the required movement of the divider relative to the saw cylinder is determined by the formula

$$X_0 = \frac{1}{2} \sqrt{L^2 \cos^2 \alpha - h^2}$$

Obviously, the greatest movement of the divider will be when the strand of fibres is located perpendicular to the generatrix of the saw cylinder $\alpha = 0$ (where h is the step between the saws of the saw cylinder)

$$X_{0\max} = \frac{1}{2} \sqrt{L^2 - h^2}$$

So, for example, with the length of the fiber strands $L = 30$ mm, the saw pitch $h = 7$ mm, the required movement of the divider will be about 14 mm.

Conclusion

During the action of the lap by the divider, several zones of bending by the fibers of both the saw blades and the divider elements are observed. In the process of bending around, intensive combing of the fibers takes place, their parallelization and scraping of trash impurities, which increases the efficiency of fiber cleaning by 15-25 per cent.

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IBI (India) = 4.260
OAJI (USA) = 0.350

SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 12.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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RESEARCH OF SORPTION PROPERTIES OF COVALENTLY IMMOBILIZED NITROGEN- AND SULFUR-CONTAINING LIGAND AND COORDINATION COMPOUNDS OF CERTAIN D-METALS

Abstract: This article studies the sorption properties of the ligand obtained on the basis of covalent attachment of O, O-di- (2-aminoethyl) -dithiophosphate potassium on a urea-formaldehyde matrix, in particular, complexing properties with ions of copper, zinc, cadmium and silver. The structure of the synthesized covalently immobilized ligand was determined by IR spectroscopy and thermal analysis. The results obtained showed that the synthesized immobilized ligand has a high sorption capacity for copper, zinc, cadmium and silver ions in weakly acidic solutions.

Key words: immobilized ligand, in situ method, O, O-di- (2-aminoethyl) -dithiophosphate potassium, coordination compound, copper (II), zinc (II), cadmium (II) and silver (I).

Language: Russian

Citation: Kasimov, Sh. A., Turaev, Kh. Kh., & Mardonov, A. B. (2021). Research of sorption properties of covalently immobilized nitrogen- and sulfur-containing ligand and coordination compounds of certain d-metals. *ISJ Theoretical & Applied Science*, 11 (103), 444-449.

Soi: <http://s-o-i.org/1.1/TAS-11-103-44> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.11.103.44>

Scopus ASCC: 1604.

ИССЛЕДОВАНИЕ СОРБЦИОННЫХ СВОЙСТВ КОВАЛЕНТНО ИММОБИЛИЗОВАННОГО АЗОТ- И СЕРОСОДЕРЖАЩЕГО ЛИГАНДА И КООРДИНАЦИОННЫЕ СОЕДИНЕНИЯ НЕКОТОРЫХ D-МЕТАЛЛОВ

Аннотация: В данной статье изучены сорбционные свойства лиганда полученного на основе ковалентного закрепления O,O-ди-(2-аминоэтил)-дитиофосфата калия на карбамидоформальдегидной матрице, в частности комплексобразующих свойств с ионами меди, цинка, кадмия и серебра. Структура синтезированного ковалентно иммобилизованного лиганда определена методами ИК-спектроскопии и термического анализа. Полученные результаты показали, что синтезированный иммобилизованный лиганд обладает высокой сорбционной ёмкостью к ионами меди, цинка, кадмия и серебра в слабокислотных растворах.

Ключевые слова: иммобилизованный лиганд, способ in situ, O,O-ди-(2-аминоэтил)-дитиофосфат калия, координационное соединение, медь (II), цинк (II), кадмий (II) и серебро (I).

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Введение

Синтез новых ковалентно иммобилизованных лигандов, разделение с их помощью переходных металлов из растворов комплексообразующими сорбционными методами, изучение состава, строения, физико-химических свойств координационных соединений, образующихся в процессе сорбции, является одной из основных задач неорганической химии.

В литературе приведены синтез нового комплекса основания Шиффа с медью (II) который иммобилизован на диоксиде кремния и использован для синтеза производных 1,2,3-триазола в качестве катализатора [1]. Также изучен процесс комплексообразования в матрицах с иммобилизованным желатином $Cu_2[(Fe(CN)_6)]$ в контакте с водными растворами дитиооксамида и этанала при $pH > 10$. С помощью шаблона было показано, что в этих конкретных условиях происходит синтез с образованием хелата Cu (II) с тетраденатным (N, N, S, S) -лигандом (2,8-дитио-3,7-диаза-4,6-диметил-5-оксанонандитиоамид-1,9) с соотношением металл: лиганд 1: 1 [2].

Микро/нано силикагель функционализирован пиридинилтиоэфирным фрагментом и была исследована возможная координационная химия железа (II) на поверхности функционализированных материалов и каталитические свойства при каталитическом разложении 1,2-дигидроксибензола (катехола) перекисью водорода [3]. Также разработан способ изготовления чувствительных элементов для оптических сенсоров на основе прессованных мембран толщиной 250 мкм из оптически прозрачного полистирола. Способ сборки реагентов на поверхности матрицы включает последовательно выполняемые нитрование, восстановление, диазотирование и азосочетание с органическими реагентами класса моноазохромотроповой кислоты. Оптические свойства иммобилизованных реагентов и образуемых ими комплексов с ионами металлов практически аналогичны соединениям, образуемым в растворах [4].

Получен сорбент поликонденсацией карбамида, формальдегида и 2-аминопентандиовой кислоты, а также изучены его сорбционные свойства [5], функционализирована поверхность целлюлозы тиосемикарбазидными группами [6], синтезированы иммобилизованные металлокомплексы некоторых d и f элементов с гетарилформазанами [7], изучено концентрирование Cu (II), Co (II), Ni (II) и Cd (II) на силикагеле с ковалентно иммобилизованной азогидразонной группой [8], определены сорбционные характеристики по ионам Co (II), Cd

(II), Ni (II), Cu (II) и Zn (II) на силикагеле с ковалентно-иммобилизованным 1-(2-пиридилазо)-2-нафтолом [9], сорбционно-фотометрическое определены ионов кобальта с помощью иммобилизованного реагента 4-амил-2-нитрозо-1-нафтола [10]. Предложен сорбент для концентрирования лантана из проб воды большого объема Сорбент устойчив в динамических условиях и основан на сверхсшитом полистироле, модифицированном 1-фенил-3-метил-4-бензоилпиразол-5-оном [11].

Изучены сорбционные свойства волокнистых сорбентов новых типов, модифицированных гидроксиламином, этилендиамином или гексаметилендиамином. Показана возможность их использования для иммобилизации 1- (2-пиридилазо) -2-оксинафталин-3,6-дисульфоновата динатрия и найдены оптимальные условия для определения железа (III) в воде [11]. Исследована возможность высокочувствительного сорбционно-спектрометрического определения Th (IV) и U (VI) в присутствии друг друга на твердой фазе волокнистых анионообменных материалов с арсеназо M и арсеназо III. В качестве твердой фазы использовалось полиакрилонитрильное волокно с теплообменником АН-31, АНКБ-50 или ЭДЭ-10П. Показано, что исследованные системы позволяют селективно определять торий в присутствии одно- или двухкратного количества урана [13]. Определены оптимальные условия для обнаружения иона тяжелого металла свинца (II) с использованием недавно синтезированного сорбента PPA 1, иммобилизованного с помощью сульфарсазенового реагента; в качестве сорбентов выбраны сорбенты ППА-1 и СМА-1 [14]. Предложен металл-хелатный подход к удалению фторхинолонов из водных растворов, используя их способность связывать сильно двухвалентные и трехвалентные ионы металлов, иммобилизованные в полимерной матрице. Металлоаффинные сорбенты для поглощения ципрофлоксацина были изготовлены путем хелатирования ионов Cu (II), Al (III) и Fe (III) сверхмакропористым криогелем производного карбоксиалкил хитозана (N- (2-карбоксиэтил) хитозан, СЕС) перекрестно связаны с гексаметилендиизоцианатом в водной среде [15].

Новый сорбент на силикагеле, 5-аминоизофталогидразид с иммобилизацией на силикагеле (SiO_2 -APH), был получен конденсацией 3-хлорпропил-функционализированного силикагеля с 5-аминоизофталогидразидом (APH), полученным из диметил-5-аминоизофталата, в качестве исходного материала и использован для разделения и концентрирования металлов Cu, Zn и Pb в пробах воды с использованием пламенной

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атомно-абсорбционной спектрометрии (FAAS) [16].

Хелатообразующие иммобилизованные лиганды широко используются для концентрирования и разделения микроэлементов. Дальнейшее развитие их применения связано с высокой селективностью и эффективным эффектом концентрации ионов элементов из растворов сложного химического состава. Использование иммобилизованных лигандов, обладающих высокой селективностью по отношению к ионам цветных металлов, является одним из перспективных направлений в практике очистки сточных вод.

Цель и методы исследования.

Целью исследования является исследование сорбционных свойств полученного иммобилизованного лиганда, на основе ковалентного закрепления способом *in situ* O,O-ди-(2-аминоэтил)-дитиофосфата калия на карбамидоформальдегидной матрице.

ИК-спектроскопические исследования иммобилизованного лиганда проводили на инфракрасном ИК-Фурье спектрометре IRTTracer-100 SHIMADZU (Япония) (диапазон 400-4000 cm^{-1} , разрешение 4 cm^{-1}), порошкообразным методом. Сорбционных свойств иммобилизованного лиганда изучены методом потенциометрическим титрованием. Эксперименты проводилось с помощью pH-метра Vante210 Benchtop pH Meter (Китай, 2020). Цифровой стационарный pH-метр Vante210 с

электродом 3-в-1, диапазон измерения pH от -1.00 до 15.00pH (с точностью $\pm 0.01\text{pH}$, дискретность 0.01pH), диапазон mV от 1000 до 1000mV (с точностью $\pm 1\text{mV}$, дискретность 1mV), диапазон измерения температуры 0-105 $^{\circ}\text{C}$ (с точностью $\pm 1^{\circ}\text{C}$, дискретность 0.1 $^{\circ}\text{C}$). ИК спектроскопические и потенциометрические исследования проводили в анализаторах в Ташкентском научно-исследовательском институте химической технологии.

Результаты и обсуждение.

Для синтеза иммобилизованного лиганда на основе ковалентного закрепления способом *in situ* O,O-ди-(2-аминоэтил)-дитиофосфата калия на карбамидоформальдегидной матрице процесс ковалентной иммобилизации O,O-ди-(2-аминоэтила)-дитиофосфата калия с карбамидоформальдегидной смолой проводили в мольных соотношениях 1:2 исходных веществ при температуре 90 $^{\circ}\text{C}$, продолжительность реакции составляла 1 ч. По результатам элементного анализа – найдено: C – 29,16%, H – 4,98%, N – 16,55%, O – 13,82%, P – 9,46%, S – 18,93%; вычислено: C – 29,03%, H – 4,84%, N – 16,29%, O – 14,2%, P – 9,15%, S – 18,31%. ($\text{C}_{14}\text{H}_{32}\text{N}_8\text{O}_6\text{P}_2\text{S}_4\text{K}_2$)_n, n=50-70. ИК-спектр: $\nu(\text{NH})$ 3296 cm^{-1} , $\nu_s(\text{CH}_2)$ 2917 cm^{-1} , $\delta(\text{CH}_2)+\delta(\text{CN})$ 1628 cm^{-1} , $\delta_{\text{as}}(\text{CH}_2)$ 1474 cm^{-1} , $\delta_s(\text{CH}_2)$ 1370 cm^{-1} , $\nu(\text{C-O})$ 1170 cm^{-1} , $\nu(\text{POC})$ 1029 cm^{-1} , $\nu(\text{C-C})$ 895 cm^{-1} , $\nu(\text{P-O})$ 728 cm^{-1} , $\nu(\text{P=S})$ 684 cm^{-1} , $\nu(\text{P-S-})$ 468 cm^{-1} (рис.1., табл.).

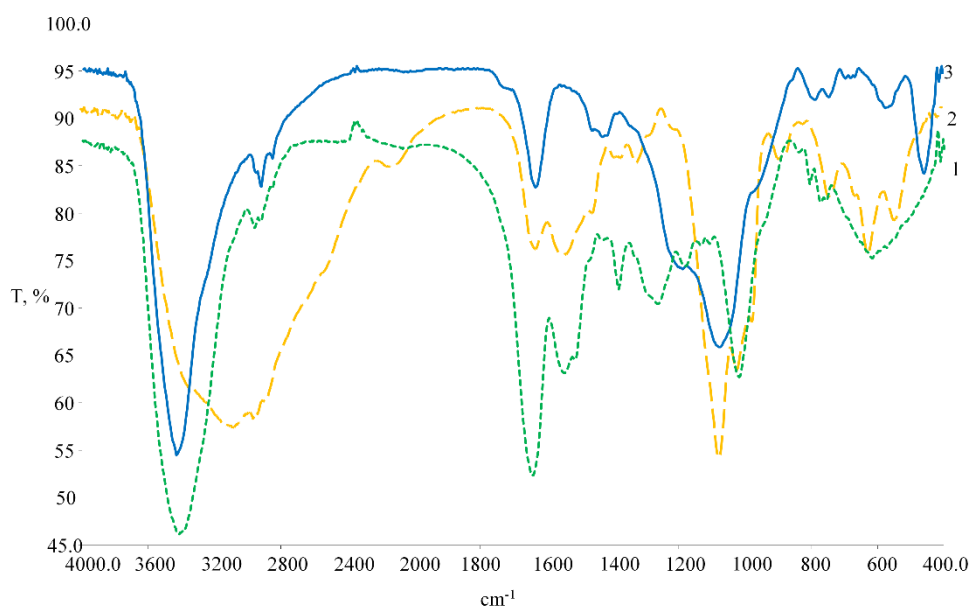


Рис.1. ИК-спектры карбамидформальдегидной матрицы (1), ди-(2-аминоэтил) дитиофосфата калия (2) и сорбента (3) на их основе.

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Таблица 1. Частоты поглощения в ИК-спектрах лиганда L и его координационных соединений с ионами Cu (II), Zn (II), Cd (II), Ag (I), см⁻¹

Ди-(2-аминоэтил)-дитиофосфат калия	Частоты поглощения, см ⁻¹					Характеристики частоты поглощения
	L	L+ Cu (II)	L+ Zn (II)	L+ Cd (II)	L+ Ag (I)	
3084	3296	3308	3298	3307	3311	$\nu(\text{NH})$
2952	2917	2923	2925	2918	2921	$\nu_s(\text{CH}_2)$
1628	1628	1603	1607	1601	1598	$\delta(\text{CH}_2) + \delta(\text{CN})$
1457	1474	1471	1473	1468	1476	$\delta_{as}(\text{CH}_2)$
1367	1370	1382	1375	1377	1372	$\delta_s(\text{CH}_2)$
1074	1170	1128	1153	1135	1147	$\nu(\text{C-O})$
973	1029	1035	1027	1033	1039	$\nu(\text{POC})$
895	895	893	897	892	890	$\nu(\text{C-C})$
743	728	752	743	751	762	$\nu(\text{P-O})$
625	684	653	661	657	644	$\nu(\text{P=S})$
545	468	445	456	443	435	$\nu(\text{P-S-})$

Структуры образовавшегося лиганда, синтезированного на основе ковалентного закрепления O,O-ди-(2-аминоэтил)-дитиофосфата

калия на карбамидоформальдегидной матрице, предлагаются следующим образом.

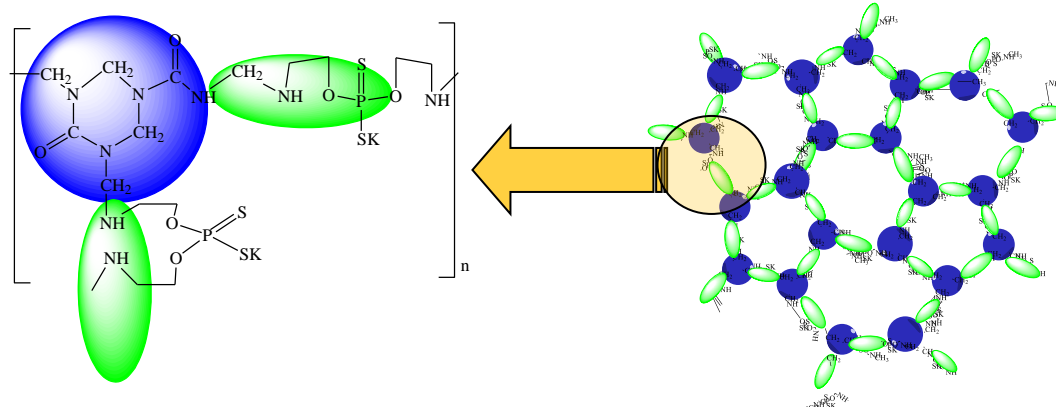


Рис.2. Модель ковалентного закрепления O,O-ди-(2-аминоэтил)-дитиофосфата калия на карбамидоформальдегидной матрице.

Изучено комплексообразование ионов металлов с полученным макролигандом. Для этого приготовили 250 мл 0,1 н раствора нитратных и хлоридных солей соответствующих металлов, из

которых 10 мл поместили в стеклянную ампулу, добавили 0,03 г макролиганда и оставили на 2 часа.

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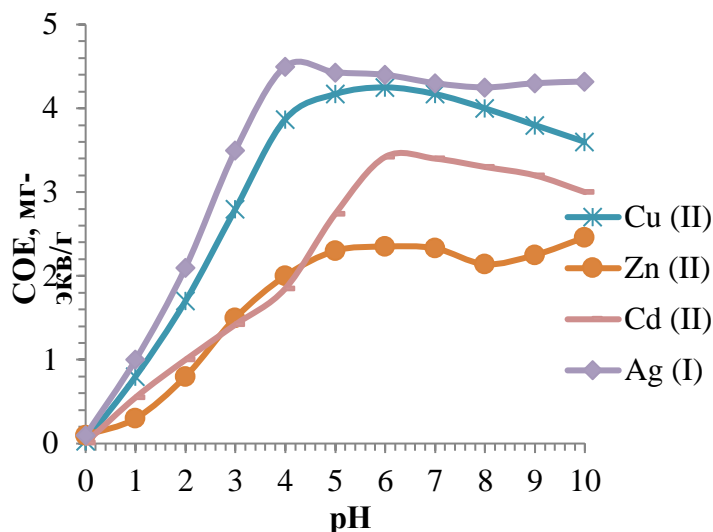


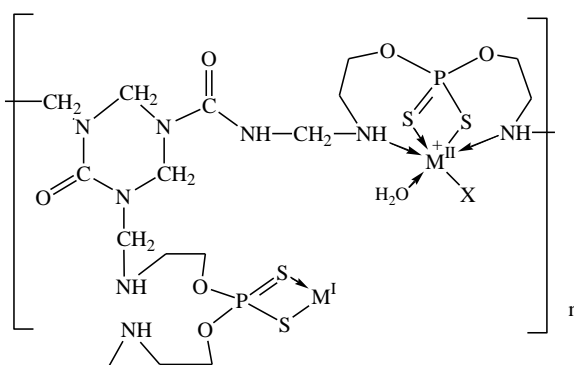
Рис.3. Зависимость сорбции некоторых d-металлов с лигандом L от pH среды ($C_{Me}=0,1$ н, $m_{сорб}=0,03$ г, $\tau=2$ с, $V=10$ мл).

Согласно результатам исследования сорбции металлов лигандом L, статическая обменная емкость лиганда (мг-экв/г) при оптимальной pH среды составляет (рис.3.):

- Cu (II) – 4,25 (pH=6);
- Cd (II) – 3,42 (pH=6);
- Zn (II) - 2,3 (pH=6);
- Ag (I) – 4,5 (pH=4).

Как видно из графика на рисунке 3, в этом лиганде степень сорбции ионов металлов превышает максимум в диапазоне от pH = 4 до pH = 7 от pH среды раствора. Группы P = S и P-S-H, содержащиеся в молекуле L лиганда, образуют

координационные связи с атомами металлов. В этом случае группа S-H подвергается депротонированию (атом H имеет эффективный заряд 1,209 эВ), и атом серы образует связь с атомом металла. Металл ионов может связываться с комплексообразующим агентом лиганда L через его атомы серы с образованием внутреннего комплекса хелатного типа. Эти теоретические выводы проверены на основе анализа ИК-спектров полученных комплексных соединений. На основании данных ИК-спектров строение комплексных соединений, образующихся в результате сорбции, имеет следующий вид:



Где, M^{II} -Cu (II), Zn (II), Cd (II), M^I -Ag (I), X-Cl⁻, NO₃⁻.

Выводы.

Таким образом, изучены структура и сорбционных свойств полученного ковалентно иммобилизованного лиганда, на основе ковалентного закрепления способом *in situ* О,О-ди-(2-аминоэтил)-дитиофосфата калия на

карбамидоформальдегидной матрице, обладающей высокими комплексообразующими свойствами к катионам меди, цинка, кадмия и серебра. Определена сорбционная емкость лиганда к меди, цинку, кадмию и серебру в статическом режиме. Предложена структура комплексных соединений, полученных сорбционным способом.

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Impact Factor:

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ICV (Poland) = 6.630
PIF (India) = 1.940
IBI (India) = 4.260
OAJI (USA) = 0.350

SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 12.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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Teacher,

Fine Arts and Engineering graphics

AN EXAMPLE IN A MUSEUM IS THE MAKING OF A JUG DECORATED WITH MULTICOLORED ENGOBES

Abstract: This is evidenced by the ceramics found in Afrosiab and Central Asia. Central Asian culture developed rapidly during this period. This is a new era. Many scientists, writers and thinkers have appeared. In the 19th century, ceramics became widespread among Tajiks and Uzbeks in Central Asia, and pottery centers appeared in Gijduvan, Penjikent, Samarkand, Sakhrisabz, Tashkent and Rishtan.

Key words: raw material, Rishtan, drawing, landscape design, engineering graphics, Gijduvan, Penjikent, Samarkand, Sakhrisabz, Tashkent.

Language: English

Citation: Begijonov, J. (2021). An example in a museum is the making of a jug decorated with multicolored engobes. *ISJ Theoretical & Applied Science*, 11 (103), 450-453.

Soi: <http://s-o-i.org/1.1/TAS-11-103-45> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.11.103.45>

Scopus ASCC: 1200.

Introduction

They have created their own unique way of decorating ceramics. In 1930, experimental ceramic workshops were opened in Tashkent and ceramic workshops in Samarkand. In 1932, the Tashkent training and production workshop was created, in which courses were organized by local masters of applied art, including pottery. In 1943, an educational and artistic enterprise was created in Shakhrisabz. Famous potters taught young people the secrets of pottery. Pottery is getting more and more attention these days. The quality of the pottery was different from that of the local craftsmen of Uzbekistan. Unlike potters in districts, pre-cleaning allows them to be used in production without mixing with other types of soil. Different types of natural mud occur:

White is the most common color, initially gray, and after heat treatment, ivory acquires a pleasant shade.

Red - contains iron oxide, which gives the raw material a green color. The main color of the raw material is brown, after firing the products turn red. It helps to model itself well, does not collapse, and is very suitable for sculptures and large products.

Porcelain is gray in raw form and white after baking.

Blue - often used in cosmetology and traditional medicine.

The black or dark brown ceramic mass that takes on the ivory shade after being baked is the hardest clay.

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1 photo



2 photo

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Potters mined various paints, quartz clay and refractory clay in the mountains near Rishtan. In the 1960s, the traditional centers for the production of the aforementioned blue ceramics began to disappear. In

this context, the decision of the All-Union Meeting of Artists (Fergana, 1974) to preserve the traditions of the production of blue alkaline ceramics became practical.



3 photo

The craftsmen liked this solution. They returned to their original production and began to revive traditional forms and ways of decorating objects. Over the next 20 years, Rishtan ceramics were revived using traditional artistic and technological methods. Alkaline secretions are also prepared. The local artistic peculiarities of Rishtan ceramics are largely reflected in the design of the objects.

Among the girich ornaments of 1990-2000 - a lattice pattern, a rhombic pattern, a rhythmic arrangement of triangular shapes, a flat image of round shapes in the form of a chain, a dot pattern in the form of alternating black and white squares in the form of curves and straight lines, abstract geometric ornaments are widespread in the form of circles and petals.



4 photo

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The plant ornament is especially varied and rich. New interpretations of flora are especially noticeable in the interpretation of themes, especially with the use of traditional symbols. Animals and anthropomorphic subjects are presented in Rishtan ceramics according to the “piece by piece” principle. He embodies the idea of the integrity of the body of a person, animal and bird through certain elements.

In the development of Rishtan ceramics in 1990-2007. The following principle can be noted. Rishtan masters, respecting the traditional heritage, boldly and

dramatically change the interpretation of the forms of objects and the nature of the embroidered ornaments. The consistent and complete restoration of traditional forms and patterns is replaced by unconditional adherence to traditions, individual creative initiative, the expansion of new techniques and types of ornamentation. Before we start working on a sample from a museum jar, let's take a closer look at this sample. We need to know exactly what clay the master made the pot from, what paints were used to make it and how it was fired.

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International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 12.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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TEACHING METHODS IN INTEGRATING TOPOGRAPHIC DRAWING AND LANDSCAPE DESIGN

Abstract: This article discusses, albeit in part, improving teaching by integrating the sciences of topographic drawing and landscape design into the engineering graphics and design sciences cycle. Common surfaces of the second order are widely used in the practice of engineering graphics and design sciences. Therefore, the graphical convenience of these surfaces is studied in descriptive geometry and topographic drawing, as well as in the design of shafts. Cross-sections and geometric properties of general second-order surfaces have been studied more than other complex surfaces. Because the formation of these surfaces is based on a certain mathematical law.

Key words: topographic drawing, landscape design, engineering graphics, projection, interior design, education, topics, Suviner, perspective.

Language: English

Citation: Haqberdiyev, B. R. (2021). Teaching methods in integrating topographic drawing and landscape design. *ISJ Theoretical & Applied Science*, 11 (103), 454-457.

Soi: <http://s-o-i.org/1.1/TAS-11-103-46> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.11.103.46>

Scopus ASCC: 1200.

Introduction

The science of engineering graphics is all-encompassing, it enhances human thinking and spatial imagination. The science of engineering graphics is also distinguished by its complexity and interestingness compared to other disciplines. Therefore, it is no coincidence that a number of disciplines relate to engineering graphics. In higher educational institutions, academic lyceums and professional colleges of the system of higher and secondary specialized education of the Republic of Uzbekistan, fine arts and engineering graphics are used as a creative exam for entrance examinations in design.

But while the sciences in the graphics cycle and the sciences in the design cycle are inextricably linked, engineering graphics is often poorly taught in design curricula.

The lack of interdisciplinary communication between the studied general graphic art, special engineering graphics and design sciences negatively affects the quality of training students in the specialty of engineering graphics. Therefore, to eliminate the contradiction revealed during the experiment, we developed the following:

- test tasks that allow them to be ready to apply their knowledge in the field of design and engineering graphics in the design process;

- a system of practical exercises, including creative tasks, exercises, graphic works, using the interdisciplinary relations presented in the table.

It is noteworthy that when the connection between these two sciences is emphasized, their basis is primarily the diagram. Descriptive geometry often uses kinematic surface shaping. The appearance of kinematic surfaces depends on the shape of their creator and the law of motion in space. For example, on linear surfaces, the shape of the constructor is rectilinear, and the law of its motion in space is determined by the guiding surface.

On rotating surfaces, the shape of the creator is an arbitrary line, and the law of formation is that it rotates around a certain axis. On helical surfaces, the manufacturer's shape is straight or curved, and the law of formation is helical (rotational and translational) motion. Some surfaces cannot be defined by precise geometric laws. Such surfaces are defined by several points or lines lying on this surface.

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In our time, landscape design is very developed. Landscaping is based on the science of topographic drawing and the science of engineering graphics.



1 landscape design photo

Introductory lectures, in which the problem of preparing students for the study of a new topic from landscape design is solved. These classes develop the deductive thinking of students in the disciplines of engineering graphics, making connections between past and new topics;

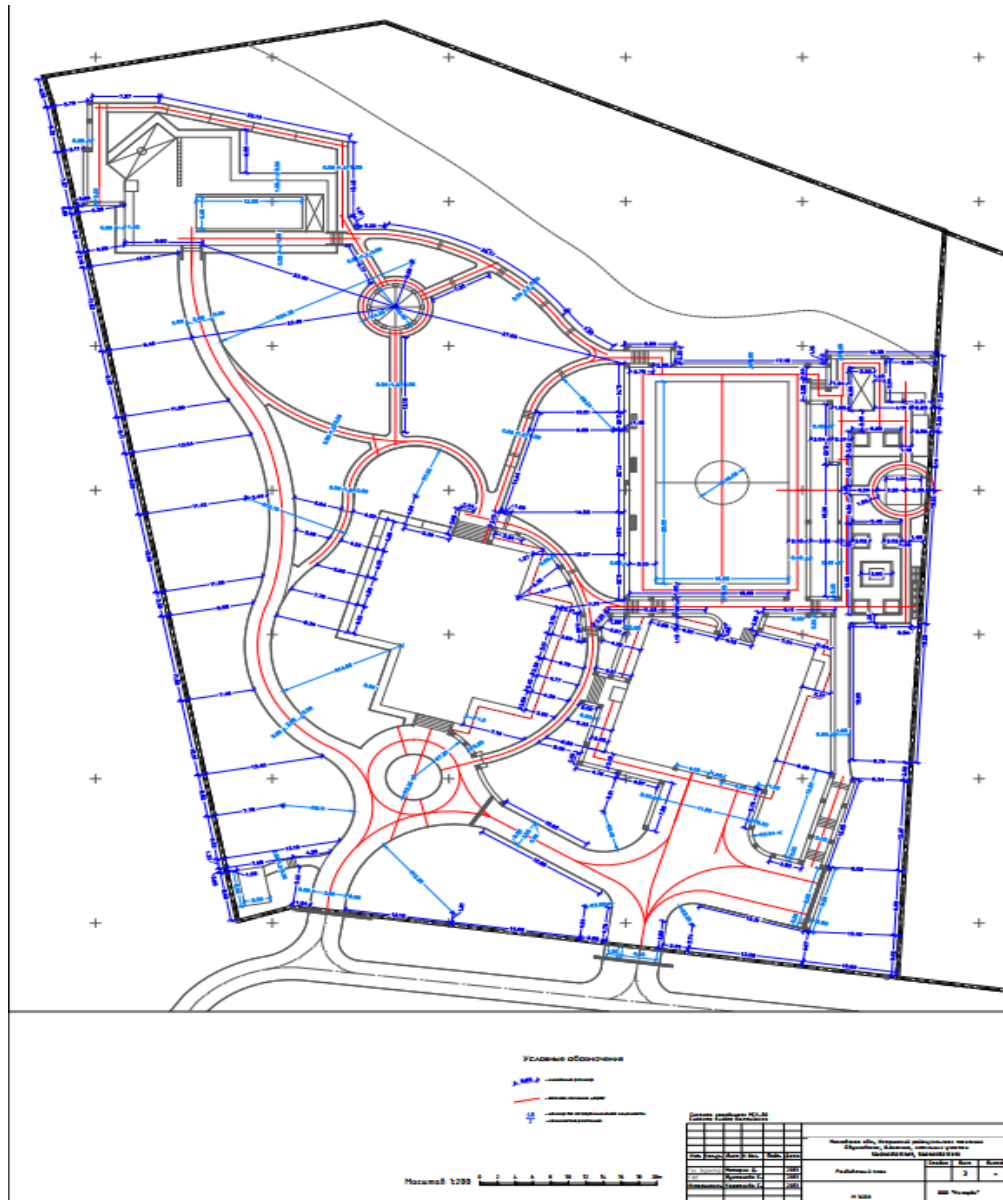
Problematic lectures, lectures on topographic drawing and landscape design include unresolved issues of educational material for students, the teacher interprets the topic as a scientific problem, not only facts are stated, but areas of its practical significance are highlighted.

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2 photos of the drawing of landscape design

Planned errors are given to students from lectures on topographic drawing and landscape design with errors and omissions in preliminary demo drawings. Finding and analyzing drawings that match the design, activate the creative thinking of students, increase their attention and arouse interest in solving an existing problem.

Discussion at lectures on landscape design, a dialogue is established between the student and the

teacher, who in the learning process share their views with each other;

Generalizing lectures, allowing students to systematize their knowledge of the content of the disciplines of topographic drawing and landscape design, are held at the end of large sections or at the end of the course.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 12.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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University of World Economy and Diplomacy
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FIVE FACTORS OF GRAMMATICAL COMPETENCE IN TEACHING FRENCH

Abstract: In this article we focused on two features of the language. The first is what we theoretically mean by communicative communication, the second is that we are trying to answer the question of what is the semantic feature of the widespread use of the five factors of grammatical competence in oral speech, and the third is that in mastering grammatical literacy in French there are *impératif* - semantic features of the use of the imperative mood.

Key words: grammar, vocabulary, semantics, language features, literacy.

Language: Russian

Citation: Mamatkassymova, V. A. (2021). Five factors of grammatical competence in teaching French. *ISJ Theoretical & Applied Science*, 11 (103), 458-461.

Soi: <http://s-o-i.org/1.1/TAS-11-103-47> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.11.103.47>

Scopus ASCC: 1203.

ПЯТЬ ФАКТОРОВ ГРАММАТИЧЕСКОЙ КОМПЕТЕНТНОСТИ В ОБУЧЕНИИ ФРАНЦУЗСКОМУ ЯЗЫКУ

Аннотация: В этой статье мы сосредоточились на двух особенностях языка. Первое - это то, что мы теоретически подразумеваем под коммуникативным общением, второе - то, что мы пытаемся ответить на вопрос, в чем заключается семантическая особенность широкого использования пяти факторов грамматической компетентности в устной речи, а третье - это то, что в овладении грамматической грамотностью во французском языке есть *impératif* - смысловые особенности употребления повелительного наклонения.

Ключевые слова: грамматика, лексика, семантика, особенности языка, грамотность.

Введение

Коммуникативное общение - это способность осуществлять речевую деятельность в восприятии объективного существа - понимать, говорить, писать, слышать. Например, понимать информацию, опубликованную в СМИ, газетах и статьях, озвучивать их содержание, понимать намерения слушателя и выйти на связь

Основу общения составляют 3 компетенции. 1) лингвистический, 2) социолингвистический, 3) прагматический.

Лингвистическая компетентность *savoir-faire* - это языковые единицы: фонема, морфема, слово, фраза, предложение, фраза и наречие, а также их прагматическое использование в языке.

Социолингвистическая компетенция

напрямую связана с лингвокультурологией. Здесь представлены различные диалоги, типы обращения (вежливость), использование языка в театре, медицине, кино, театре, бытовых услугах, почтовом отделении, гостинице, телефоне, парикмахерских.

Прагматическая компетентность. Отношение языка к речи - это его стилистическое использование. Здесь описывать что-то, рассказывать, выражать свое мнение как объект. Перемещение, имитация и так далее. Различное использование другого слова в разных языках.

Эти компетенции реализуются в 4 случаях:

1. Индивидуально;

2. В команде. Простые изменения в социальном обществе (торговые отношения

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граждан, бытовые услуги, духовно-просветительская работа, отдых, СМИ).

3. По профессиональному мастерству. Учителя, врачи, биологи, математики и др.

Следует отметить, что в последние годы грамматика как самостоятельный аспект в изучении иностранных языков стала немного труднее найти свое место в учебной программе, и мы чувствуем, что грамматика стала невидимой при общении на иностранных языках. Эта ситуация вызывает определенное беспокойство у лингвистов и методистов. Они убежденно утверждают, что коммуникативную компетенцию невозможно приобрести без языковой компетенции, то есть без знания грамматики.

При обучении иностранным языкам уместен коммуникативный подход, особенно если речь идет об изучении грамматики ситуативным методом.

На наш взгляд, цель овладения базовыми грамматическими навыками - уметь понимать ситуацию и формулировать свою точку зрения по отношению к ней. То есть основная задача коммуникативной грамматики - контролировать использование речи в ситуации и связывать грамматические навыки с этой новой ситуационной ситуацией.

Что такое коммуникативная грамматика? Коммуникативная грамматика - это использование языковых единиц в устной речи. Его задача - научить устному общению на иностранном языке. В настоящее время грамматика составляет основное содержание учебных программ при изучении иностранных языков. Грамматика французского языка играет важную роль в качестве языка-посредника в развитии и формировании речевой деятельности человека, а также в формировании и компетенции навыков и умений. Коммуникативная грамматика - это не отдельная часть языка, а средство включения речевых идей в систему и осуществления речевого процесса в конкретной языковой ситуации.

Вокруг грамматики было столько споров, что результат можно разделить на два больших полюса. В то время как методисты и лингвисты первых цивилизованных наций, включая французов, японцев, китайцев и русских, знали грамматику как ключ к общению, представители второй культуры, такие как американцы и британцы, утверждали, что изучение грамматики связано с целым рядом знаний, ситуаций или речевых актов.

Некоторые ученые, напротив, предлагают комплексный подход к овладению грамматическими навыками. Грамматическая компетентность - это способность составлять фразы и предложения без грамотных ошибок, правильно адаптировать и использовать времена,

хорошо знать группы слов и составлять различные типы предложений. Приобретение грамматических навыков - очень важный аспект изучения языка. Грамматическая компетентность была в центре многих учебных пособий по правилу, и они включают в себя конкретные грамматические правила, которые являются конкретными и включают множество упражнений для их закрепления.

Чтобы полностью овладеть грамматическими навыками, необходимо обратить внимание на следующие пять языковых факторов: 1. Видеть и принимать что-то, 2. Имитация, 3. Замещение, 4. Преобразование, 5, Воспроизведение, восстановление или описание. Самостоятельное использование грамматических форм.

Увидеть и принять что-то. При передаче и выражении материала: интонация, пауза, ударение, порядок слов и т. д. Pierre est venu. Pierre est-il venu?

Pierre n'est pas venu. Pierre, viens! Pierre viendra. Je veux que Pierre vienne. Pierre viendra, peut-etre. Je ne crois pas que Pierre vienne.

Имитация или симуляция. Произношение звуков, возвращающихся из-за спины учителя или диктора.

Замена. Замена модели на другие слова. Пишем, читаем, играем на уроках ...

1) Pierre a invite quelqu'un. Quelqu'un a invite Pierre.

2) Les ouvriers construisent une maison, la maison est construite par les ouvriers

3) Un train est arrive > Il est arrive un train.

Преобразование. Изменения грамматических форм в процессе речевой деятельности.

En français

1. Il écoute attentivement ce qu'on dit
2. Il écoute avec attention ce qu'on dit
3. Il écoute d'une oreille attentive ce qu'on dit
4. Il porte une oreille attentive ce qu'on dit

En russe

1. Он огорчен, потому что ты уезжаешь.
2. Он огорчен из-за твоего отъезда.
3. Он огорчен твоим отъездом.
4. Его огорчает твой отъезд.

En ouzbèque

1. У пахтани тез теряпти.
2. У пахтани тезлик билан теряпти.
3. У пахта теришни тезлаштиряпти.
4. Унинг пахта териши тезлашяпти.

Репродукция, восстановление или визуализация. Самостоятельное использование грамматических форм.

Эта книга принадлежит моему другу, книга принадлежит моему другу, владельцем книги является мой друг.

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Словом, грамматику целесообразно систематически преподавать как по морфологии, так и по синтаксису с разными речевыми ситуациями. Ниже мы анализируем случаи, когда тенденция повелительного наклонения используется в коммуникативной грамматике.

Семантические особенности использования повелительного наклонения при приобретении грамматической грамотности во французском языке.

В этой статье мы предлагаем ряд разговорных ситуаций для дальнейшего улучшения навыков и компетенций на уроках грамматики. Виды речевой деятельности включают аудирование, говорение (монолог, диалог), чтение. Основное внимание уделяется разговорным упражнениям. Многие задания включали информацию о страновых исследованиях. Таким образом, создаются условия для формирования языковых, социокультурных и коммуникативных компетенций у студентов.

Во французском языке **Impératif** - повелительное наклонение действует как команда в любом общении. Это наклонение может использоваться для выражения таких значений, как команда, совет, предложение, просьба, разрешение, запрет, предупреждение, рекомендация. Например: **impératif** имеет следующие значения: 1) **Le conseil** : Sachez attendre, soyez patient, tout va s'arranger. 2) **La prière** : Pierre, n'aie pas peur, je ne m'en vais pas (Adamov). 3) **Le souhait** : -Sois content ! Tu auras cet oeillet d'or. Il va venir. 5) **L'ordre, la défense** : -Chut !...Ne bouge pas (Simenon) Descendez de là immédiatement. 6) **La politesse formelle**, à l'écrit surtout, avec **veuillez**. Veuillez trouver ci-joint le document que vous nous avez demandé. 7) **La prévention** (l'avertissement). **Ne touche à rien. Soyez prudents ! Soyez poli !**

Следует отметить, что во французской речи наблюдается тенденция к широкому использованию команд в различных речевых ситуациях. Например:

1. «**Documents authentiques**». - Предлагаются аутентичные утверждения, и учащиеся должны проанализировать эти речевые ситуации и определить, кто говорит.

• Attention! Un cyclone se dirige vers la côte. Fermez vos portes et vos fenêtres, coupez le gaz et l'électricité, ne sortez pas! (une annonce à la radio) • Mettez-vous au régime. Ne mangez pas n'importe quoi! (un médecin) • Allez! Allez! Circulez! (un agent de police) • • Regardez le **tableau! Soyez attentifs, réfléchissez! (un professeur)**

• «**Annonces, enseignes et panneaux**». Использование в рекламе и записях. Прошу запретить, вроде предупреждения. • Composez vous-même votre billet. Conservez-le jusqu'à la

sortie! Tenez la main courante. (dans le métro/RER) • Attachez vos ceintures. Eteignez votre cigarette! (tableau lumineux dans un avion) • Décrochez. Introduisez votre carte. Patientez, svp. Composez le numéro. (des instructions dans une cabine téléphonique) • Ne donnez rien aux animaux! Ne franchissez pas les barrières! (au zoo).

«**Les bonnes manières**». Вести себя за столом и сидеть прямо. «Tiens-toi droit, ne te penche pas au-dessus de l'assiette. Ne parle jamais la bouche pleine!»

«**Des recettes culinaires**». Рецепты кухни. Конечно, мы любим приглашать гостей в дом и развлекать их.

1) Pour le gâteau d'anniversaire il faut: 250 grammes de farine, 250 grammes de sucre, 250 grammes de beurre et trois œufs. **Versez** le beurre fondu dans la farine, puis ajoutez les jaunes d'œufs et le sucre. **Mélangez** le tout. **Ajoutez** ensuite les blancs d'œufs battus en neige. **Versez** la pâte dans le moule beurré et **mettez** le gâteau au four pendant une demi-heure. N'oubliez pas les bougies!

«**Dans le corps sain l'âme saine**». Здоровый дух в здоровом теле. При этом командная строка широко используется при выполнении упражнений, связанных с гимнастикой. Например: «Tenez-vous droit! Joignez les talons, levez-vous sur les pointes des pieds!»

«**Les mass media conseillent: «pour être en forme**». Молодежный журнал, радио и телевидение дают много советов молодым людям, чтобы они не теряли свой рост и постоянно следили за своим здоровьем.

Après le sport, buvez beaucoup d'eau! / Commencez votre journée par une demi-heure de gym ou de danse! Le matin, au réveil, inspirez et expirez très fort une dizaine de fois! / Mangez du poisson: c'est excellent pour la mémoire!

«**La pub**». СМИ дают нам больше советов и советов в виде объявлений. Например, • Faites des économies: achetez les produits Maxi-jeun! • Restez jeune! Buvez Evian! • Respirez l'air pur de la montagne! Agence touristique Alpes-Pyrénées. • Gardez la forme: mangez les oranges Jaffa! • Réveillez-vous en musique avec Radio-Europe!

«**Les étoiles parlent**». «MUCHAL» получают больше советов в разговорной ситуации, и их можно использовать для создания интересных речевых ситуаций.

Belier (mouton) 21 mars / 21 avril • Ecoutez vos amis! Répondez à leur invitation! Vous ferez une rencontre importante le 15. • Faites attention à votre santé: ne vous surmenez pas!

Cancer (cancer) 22 juin / 22 juillet • Jouez! Vous gagnerez! • Amusez-vous un peu, changez-vous les idées! • Santé: vous avez des maux de tête. Détendez-vous!

Vierge (fille) 23 août / 22 sept. • Une affaire importante se présentera. N'hésitez pas. Vous

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gagnerez beaucoup d'argent. • Santé: vous mangez trop. Equilibrez vos repas.

Balance(balance) 23 sept. / 22 oct. • Ecoutez vos amis. Ils sauront vous conseiller. • Vous aurez une déception passagère. Ne dramatisez pas. • Santé: protégez vos yeux!

Capricorne (chèvre) 22 déc. / 20 janv. • Un ancien projet peut renaître. Ne manquez pas la réunion le 17. Elle sera importante pour vous. • Santé: faites du sport!

«**Expressions idiomatiques**». В идиоматических выражениях повелительное наклонение используется в более широком диапазоне речевых клише и пословиц. • Veuillez (me suivre)! • Ayez (du courage/la bonté de...)! • Soyez aussi aimable de... • N'aie pas peur! • Laissez-moi réfléchir! • Comptez sur moi. • Revenons à nos moutons!

Au téléphone: • Décrochez! • Raccrochez! • Ne quittez pas! • Epelez, svp.! • Parlez plus haut!

• Rappelez (veuillez rappeler) dans l'après-midi.

Proverbes: • Aide-toi, le Ciel t'aidera. • Fais ce que dois, advienne que pourra. • N'éveille pas le chat qui dort! • Connais-toi toi-même! (Socrate) • Battez le fer pendant qu'il est chaud!

В заключение логично сказать, что коммуникативная грамматика играет важную роль в изучении грамматической компетентности во французском языке, поскольку язык в основном поддерживается грамматикой. Образно говоря, язык подобен человеку, его рост - это грамматика, его красота - это фонетика, его прекрасное тело, словарный запас - это лексика.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 12.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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THE BENEFITS OF USING DRAMA ACTIVITIES ON LANGUAGE/ SITUATION/ MOTIVATION

Abstract: Since the new rules about English language acquisition were elected, there have been several new investigations and strategies related with teaching and learning this language. The role of foreign languages has boomed in every sphere of social life. Nowadays, the majority of citizens of Uzbekistan are required to know any foreign language in order to have a stable good job and promotion in their workplace.

Key words: motivation, English, method, technique, linguistics, linguistics.

Language: English

Citation: Sheralieva, Sh. I., & Ishankulova, D. A. (2021). The benefits of using drama activities on language/situation/ motivation. *ISJ Theoretical & Applied Science*, 11 (103), 462-465.

Soi: <http://s-o-i.org/1.1/TAS-11-103-48> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.11.103.48>
Scopus ASCC: 1203.

Introduction

The majority of learners used to learn languages artificially, structures were unmanageable and vocabulary was far-fetched. Educational prospectuses were usually extraneous and firmly inflexible. Even though much has changed in foreign language teaching, still it is true that in many educational sectors *Vocabulary + Grammar = Language* lies at the base of virtually every foreign language syllabus. Needless to say, teaching in this way takes into consideration merely one feature of the target language the intellectual aspect. Nevertheless, language is not only intellectual matter because it functions with elements of emotion, considers human beings' mind as well as their body. The disadvantage of a scholastic curriculum is that it usually takes into account the intellectual characteristics, so that teachers pay attention to students' orthography, structural, metaphorical aspects and lexicology too. In fact, the skills learners often need for producing the language are neglected in traditional text-books. In particular, adaptability is very important – it signifies the capacity to match the speaker's speech while he is talking, speed

of reaction, sympathy to tone, appropriateness and keenness. A person who wants to have a dialogue with somebody or wants to make a monologue in a foreign language should have these features if he would like to present an adequate and natural speech. Furthermore, it is essential to deliberate that people have different mood in everyday life: someone is busy and the other is relaxed, somebody is worried or frustrated while the other one is tired or irritated. Certainly, these counted characteristics of everyday life affect the manner of speech, its speed and the emotions or mannerism. For example, a person who is busy cannot enjoy a long slow speech so that his talk with another person likely to be short and fast. Therefore, an interlocutor also should weigh how they are and who they are.

Drama is therefore needed in acquisition of foreign languages to put back overlooked emotional content into language return the body too. In addition, in order to achieve better results, teachers need to take account of meaning rather than structure of a language. Unfortunately, in many educational sectors language teaching is done through structures or conditions when it is believed that once a sentence is

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constructed correctly the usage can always be found for it. “A learner is like an architect who designs a building before inspecting the site on which it is to be placed” [1. 128 p]. The building intended to build can be perfectly structured, but if it cannot serve the same as it is expected the work of the architect becomes nonsense. In language concept it is the same – there may be nothing wrong with the structure of a sentence but if a language barrier cannot fit this sentence in right way with appropriate emotions taking into consideration the time and an interlocutor his language proficiency might not be accepted and marked highly.

Meaning of a concept should not be confused with structure. “Commands are often given in the imperative, but not always; questions are asked with question marks, but not always; continuous action in the present may be suggested by a verb ending – *ing*, but not always” [2. 25 p]. Accurate constructions of word combinations or structures need to be taught surely, but they have to be taught meaningfully from the very beginning of language acquisition. So, drama is a right way to ensure a target language in an appropriate context, no matter how fantastic or eccentric the context might look.

Generally, the word *situation* inclines to consider only one feature of context – that is the physical setting. Usually dialogues of text-books occur in various places such as stations, restaurants, cafes or schools. In such conversations usually two types of language can be used: the first is called situational – words such as *schedule*, *subjects* (for school setting), *menu*, *waiter* (for restaurant setting) and so on. The second type of language is called structural – dissimilar to vocabulary items they are phrases which are not greatly confined with the situation as refreshed by it. That is why if in one course book the topic “At the restaurant” may serve for acquiring present simple tense with WH questions (‘What would you like to drink?’) when in another text-book it may be applied for present continuous tense (‘Look! Mary is having her birthday party in this restaurant!’). A list of words or set phrases provided with some accurate sentences might be considered to be enough for a phrasebook of tourists because they provide tourists with similar conversations necessary for surviving in a totally new place for them. However, holidaymakers often say about their discoveries to their cost that a phrase they have learnt to produce with an impression of fluency may bring a response they are quite unable to follow.

Teachers always think about a concept of making students to be interested to the lessons they are conducting. A large number of techniques and approaches have been applied. Some teachers conclude that it is better to use the methods and activities which are preferred by the students. Some of them even abandon the text-books according to the preference of language learners.” Drama helps us to

keep all students of the group active all the time by making use of the dormant potential in the room. And far from making teacher’s task harder, it actually relieves him or her of the burden of trying to do the impossible: keep a large group active at the same intensity and at the same time” [3. 166 p].

According the survey conducted by Andrea Lizasoain Conejeros and Dr. Amalia Ortiz De Zarate Fernandez drama games result in high marks of the students that especially increase their confidence, motivation and stimulation. “In a drama technique provision classroom, students are more motivated and learn in a realistic communicative environment offering plenty of opportunities to use language meaningfully” [2. 78 p].

There are other several pluses of using drama techniques in classrooms. One advantage of having these activities goes to learners’ personality as it assists to build their confidence and to win out their fear or hesitation. Generally, in comparison to traditionally taught classes, the others where drama techniques are used frequently differ relatively: students in these classes are rather friendly and have better communication skills.

Another outstanding merit of the usage of drama technique is that they engage everyone to work in a collaboration. If you analyze many drama activities, they serve to create a friendly atmosphere in a classroom. None of the students are ignored or omitted while having this type of exercises. No matter a learner is self assured or timid by the nature, while working in collaboration more passive learners feel invisible support that serves them to avoid their reluctance to be active during the whole process. Certainly, you may not be able to change learners’ unwillingness wholly at once. Drama activities should be repeated from time to time, so that your students will get used to them. You had better have range of activities in every lesson in order to keep learners’ interest and active position. An attempt to revamp materials and ideas in each class increases the curiosity of students.

“Teaching should be such that it ‘sparks’ students’ interest and inspires them to keep on learning independently” [4. 61 p]. As an alternative method, drama can be used in FLT classes instead of theoretical knowledge based approaches of teaching. It is not secret that teacher’s job is not an easy labor that everyone can carry out. In order to maintain learners’ attention, lessons must be intriguing so that teachers are on a constant quest for variation to their repertoire. Teachers who has already made some attempts of applying drama in FLT classes could see the effectiveness of this approach. It is a key method to release boredom as drama-based activities engage all the learners together and enables them to feel, to act and to understand the topic or any situation spontaneously. When their abstract knowledge turns into concrete, they take pride in their accomplishments. Self-esteem increases inner

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motivation that helps to keep learners' alertness and experimental spirit.

Drama-oriented exercises are usually learner centered that means they demand active and energetic students to participate in. Learners have more responsibilities than a teacher, thus the effect of any activity depends on learners – how much effort they can show [5. 166 p]. In order to encourage them, teacher acts as a director who gives instructions and the others perform individually following the instructions. Here appears an affable cast full of enthusiasm that supports each other. Consequently, you may hardly notice rivalry atmosphere or intense dislike among learners. Well then, you as a teacher will have few troubles with discipline.

Drama oriented exercises are not only exercises or games full of fun. There is a great need for them not only in language teaching, but also in other sectors of education as well. These techniques need to be frequently used at schools for young children when they are at the real age of growing up. An attempt to drama techniques expands learners' awareness, to enable them to look at reality through fantasy and to look below the surface of actions for meanings. You should give a chance allowing students to enter into the reality of imaginery situations and characters. "This will enable them to explore emotions, attitudes, opinions and relationships and accommodate these abstract concepts more readily by representing them in a dramatic and therefore more concrete form" [6. 87 p].

Since drama makes constant demands on a person's imagination, it develops a learner's ability to think more effectively. According to Katz [5. 51 p] "A learner involved in a drama activity will be called upon to practice several thinking skills such as: inventing, generating, speculating, assimilating, clarifying, inducing, deducing, analyzing, accomodating, selecting, refining, sequencing and judging"[7. 326 p]. They have a value that most teachers might not even be aware of. Activities based on drama are significant in the development of thinking ability. They demand a learner to use improvisation and an image building in their mind that may cause to the increase of a learner's creativity and the ability to foresee the situation that will go on

consequently. Many drama exercises insist on a big or small group work. While working in groups, students share their ideas and opinions about any topic, so that they can broaden their mind and enrich the range of thoughts. In addition while discussing with others they are likely to improve their social skills and basic language skills: reading, listening, writing and mostly speaking. The active interaction of students make a constructive contribution to the development of learner's of the learner's oral communication skills [8. 71 p]. Furthermore, they serve to ameliorate aspects of their personality including empathy, confidence, concentration and communication skills.

Usually it is difficult for teachers to find activities appropriate to all learners. In fact, drama-oriented exercises can be suitable for all learners no matter their gender, age, culture and even level [9. 154 p]. As the matter of fact, these activities are can be helpful for all students according to their different learning styles. For example, a role playing, which is widely used in foreign language teaching includes all aspects of learning styles:

Visual: while performing visual learners see the actions, mimics and gestures of "actors" and memorize them well.

Audial: as in role playing all of people have some piece of speaking, dialogs for instance, the other listen to them, so memorize things by their tone or pronunciation.

Kinesthetic: role playing is very much movement based, so that learners can change their place, act out some situation or show something by gestures. They are all beneficial for kinesthetic learners as they memorize well the things that are based on physical activeness [10. 252 p].

Therefore, drama activities are needed to create a balance between the plenty of material and teaching offered to students and their superficial incapacity to make sensible use of it. Students should start to look at language from a different viewpoint, to take into account the actions within the words that language learners are most likely to perform, the forms of behavior that lie behind all languages. Thus, learners should know the total situation, which is extensively richer than the ordinary physical setting.

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IBI (India) = 4.260
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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 12.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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ON A NEW METHODOLOGY FOR ASSESSING THE COMPETITIVENESS OF INNOVATIVE TECHNOLOGICAL PROCESSES FOR THE MANUFACTURE OF PRODUCTS THAT HAVE PRIORITY AND PREFERENCES AMONG CONSUMERS IN THE REGIONS OF THE SOUTHERN FEDERAL DISTRICT AND THE NORTH CAUCASUS FEDERAL DISTRICT

Abstract: In the article, the authors consider the role of quality as a tool for promoting the philosophy of production quality of competitive and in-demand products at light industry enterprises located in the regions of the Southern Federal District and the North Caucasus Federal District. At the same time, the authors absolutely justifiably confirm the possibility of such an implementation. If innovation centers are implemented, saturated with universal and multifunctional equipment, creating the preconditions for the production of the entire assortment of footwear, namely: men's, women's and, most importantly, children's shoes, the demand for which in the regions of the Southern Federal District and the North Caucasus Federal District is quite high. And the use of software will provoke a significant reduction in production costs and guarantee its stable implementation in domestic markets with unstable demand. And here it is important not to admit a serious methodological mistake - to reduce economic policy to economic analysis, and to maintain the spirit of solidarity in the team - one for all and all for one - and success will surely find the seeker.

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.

Language: English

Citation: Blagorodov, A. A., Prokhorov, V. T., Mikhailov, K. A., & Volkova, G. Y. (2021). On a new methodology for assessing the competitiveness of innovative technological processes for the manufacture of products that have priority and preferences among consumers in the regions of the Southern Federal District and the North Caucasus Federal District. *ISJ Theoretical & Applied Science*, 11 (103), 466-487.

Soi: <http://s-o-i.org/1.1/TAS-11-103-49> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.11.103.49>

Scopus ASCC: 2000.

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Introduction

UDC 685.71: 519.44

The nature of the new competition in the modern world economy, caused by the processes of globalization, sets high demands on manufacturers to increase the competitiveness of goods and enterprises. Increasing the competitiveness of enterprises and industries is one of the most important areas of real economic growth, both in Russia and in the regions of the Southern Federal District and the North Caucasus Federal District, which is reflected in the program document, namely, in the strategy for the development of light industry in Russia for the period up to 2025.

In this regard, the problem of the competitiveness of domestic footwear requires the development of conceptual foundations of theoretical, methodological and practical recommendations adequate to the forthcoming changes in the organizational and economic mechanism of the functioning of the entire industrial complex of the country.

In modern conditions of market relations, a competitive environment and direct interaction of Russian and foreign manufacturers, solving the problem of combining state and market mechanisms for managing competitiveness is becoming a strategic resource for the economy of the regions of the Southern Federal District and the North Caucasus Federal District. In the world economy, the place of price competitiveness was taken by the competitiveness of quality levels, which will increase its relevance with Russia's entry into the WTO. An increase in the quality factor of the results of the production of domestic footwear in the strategy of competition in world markets is a long-term trend.

The task of increasing competitiveness is especially urgent for shoe enterprises, which, due to external factors (increased competition due to globalization, the global financial crisis) and internal (ineffective management), have lost their competitive positions in the domestic and foreign markets. In response to negative processes in the external environment, the processes of regionalization and the creation of various network structures are intensified, one of which is the union of commodity producers and the state.

Main part

There are three main options for the concept of an enterprise in a developed economy: neoclassical, agency (stock) and the concept of partnerships.

The concept of partnerships, or stakeholder theory, examines the dependence of a firm's actions on the interests of a wide variety of stakeholders, including consumers, suppliers, shareholders, managers, employees, etc. Moreover, each of the partners has certain rights to control the enterprise.

therefore, the concept implies the need to make decisions taking into account their interests.

The theory of strategic management is one of the most difficult areas of management science. For a fairly short period of its existence, characterized by the rapid development of a number of concepts, it managed to turn into an independent scientific discipline with its own academic infrastructure. The most important question that theory must answer is the identification of the sources of long-term competitiveness of enterprises. These sources are determined by the strategy of the enterprise and, accordingly, raise the question of its nature.

The systemic concept of the enterprise can be considered as a starting point for the strategic description of enterprises at the present time, since none of the above concepts "in its pure form represents a scheme for analysis, relevant to the real situation and role of the enterprise in any economy."

Insufficient adequacy of the concept of partnership relations of an enterprise follows from the fact that the behavior of industrial enterprises is determined to the greatest extent by the interests of only the internal top management and large owners.

However, it should be noted that this situation was typical for the 90s of the last century, but recent years have been characterized by changes in this area. Evidence of this is the gradual development and spread of the corporate governance system in the country, one of the principles of which directly emphasizes the role of stakeholders in enterprise management. One cannot fail to note the recent increase in attention to the concept of social responsibility of business.

The simultaneous coexistence of several concepts that describe the decision-making mechanism in enterprise management is due to the fact that different enterprises have specific tasks at different stages of their activities.

In particular, not all enterprises are the main consumers of stakeholder theory, but only those with an interest in maintaining and managing relationships with a wide range of partners. For such enterprises, stakeholder theory can offer non-standard approaches to address their specific challenges.

There are certain relationships between the company and partners, they can be different, both competitive and collaborative. Partners can exist independently of each other, or they can interact. The set of partners, which the adherents of this theory call "a coalition of business participants" or "a coalition of influence", is a force that continuously influences an organization, forcing it to evolve, change and adjust.

In the modern interpretation of stakeholder theory, partners are considered not just as groups and individuals affected by the organization's activities, but as contributors of a certain type of resource. Stakeholders provide the enterprise with the resources

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necessary for its activities, because its activities allow satisfying its needs. At the same time, the satisfaction of the partner's requests is nothing more than the receipt by him of resources from the organization. Thus, the relationship between the enterprise and its partners is built around the resource exchange, since each seeks to create its own resource base that would best suit the goals of the partners.

The partners of the enterprise can be divided into two groups: external and internal. External partners include: buyers, suppliers, competitors, government agencies and organizations, municipal, regional and federal authorities, financial intermediaries.

Buyers. Strategies and tactics for working with important customers include joint meetings to identify the drivers of business change, mutual efforts to develop products and the market, increase communication, use common space, and joint training and service programs. Strengthening customer relationships often provides significant benefits.

Suppliers. Many businesses involve strategically important suppliers in the product development and manufacturing process. Most businesses that use the "just-in-time" method, where components produced by suppliers are delivered directly to assembly shops, bypassing the warehouse, include suppliers in their internal processes.

Competitors. Competitors are a difficult problem because it is often in the best interest of one competitor to flinch another. However, competitors are joining forces to tackle the threat of innovative third-party products, to successfully navigate life cycles, and to leap ahead with new technologies. Competing organizations form alliances to accelerate technological progress and new product development, to enter new or foreign markets, to seek a wide range of new opportunities. Sometimes cooperation is determined by the need to develop common standards, create a common service system, etc.

Government agencies and organizations. Innovation centers, public-private enterprises and government bodies have many common goals, including the creation of favorable conditions for international trade, stable market conditions, inflation control, a successful economy, and the production of necessary goods and services. Government-business partnerships (public-private partnerships) are widely practiced in foreign countries, where governments often play a more active role in the country's economic development.

Regional and municipal authorities. Good relationships with local and regional branches of government can lead to beneficial local regulations for businesses or reduced local taxes. Therefore, the most far-sighted business leaders spend some funds to help regional and municipal branches of government in their efforts to solve local problems. Sponsorship to support local social programs, assistance to general education schools, cultural institutions, health care,

law enforcement, etc. allow reaching mutual understanding and support from such influential partners for small and medium-sized businesses as regional and municipal authorities.

Financial intermediaries are a collection of many organizations, which include, but are not limited to, banks, law firms, brokerage firms, investment advisors, pension funds, mutual fund companies, and other organizations or individuals who may be interested in investing. to the enterprise. Trust is especially important when dealing with creditors. Financial disclosure helps build trust, as does timely payments. In an effort to build relationships with creditors and establish relationships of trust, many businesses invite their representatives to their boards of directors.

Currently, there is no generally accepted methodology for assessing the competitiveness of an enterprise. A review of existing approaches to assessing the competitiveness of an enterprise made it possible to combine them into the following groups.

The first group of academic economists includes an approach to determining the competitiveness of enterprises based on identifying competitive advantages. This approach arose with the emergence of strategic planning and the development of competition theory. It allows you to analyze the achieved competitive advantages of an enterprise, but does not provide an accurate quantitative expression of the assessment results and therefore cannot be used for a comparative analysis of the competitiveness of enterprises, analysis of the implementation of the plan to increase competitiveness, the dynamics of the competitiveness of enterprises.

The second group of economists proposes an assessment of competitiveness using polygonal profiles. It is based on the construction of vectors of competitiveness by factors: concept, quality, price, finance, trade, after-sales service, foreign policy, pre-sales preparation. However, the authors do not specify how such factors as concept, foreign policy, pre-sale preparation, etc. can be assessed by combining them into one whole.

The third group of economists - offer a rating assessment of the competitiveness of an enterprise based on the following factors: product, assortment, price, image, service, packaging (design), sales volumes, market segment, supply and sales policy, advertising and demand stimulation, then there is with the calculation of the coefficient of efficiency of innovative technological solutions. The advantage of this approach is that it, in fact, evaluates not only the marketing activities of the enterprise, but also takes into account other important resources of the enterprise's potential (innovation, management, finance, etc.). In the approach proposed by the authors, a more significant sum of factors is obtained, the mutual weight of which is taken into account in partnership.

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The fourth group of economists proposes to assess the competitiveness of an enterprise on the basis of the product of an index for the mass of goods and an index of the efficiency of an object. The advantage of this approach is the fact that it is a more weighty approach to assessment, since it takes into account such important factors that determine the competitive advantages of an enterprise as the level of organization and implementation of marketing at the enterprise, finance, and export potential. In addition, most authors consider it important to develop a methodology for determining a manufacturer's efficiency factor, its competitiveness, which will form the effectiveness of these very partnerships.

The fourth approach can be attributed to the method proposed by R.A. Fatkhudinov, which proposes to assess the competitiveness of an enterprise as a weighted sum of the competitiveness of the main products of an enterprise in various markets, taking into account the importance of markets. But this approach is not entirely fair, since firstly, the competitiveness of an organization is identified with the competitiveness of a product (these are different concepts); secondly, he proposes to introduce the importance of foreign markets twice as large as the importance of national markets. Thirdly, the assessment method of Fatkhudinov R.A. does not take into account other important factors influencing competitiveness - marketing, finance, innovation, management, personnel.

The fifth group of economists proposes an approach based on a balanced assessment of the factors of enterprise competitiveness. The integral indicator of the competitiveness of the enterprise is determined according to the rules of linear convolution (the assessment of the factors of the competitiveness of individual aspects of the activity of the enterprise is multiplied by the weight of individual factors in the total amount), that is, something close to what is proposed by the authors of this article, namely, the calculation of the coefficient of efficiency of innovative technological solutions ...

So, the analysis of the theoretical and methodological aspects of the competitiveness of enterprises revealed many methods for assessing this very competitiveness of enterprises.

In this regard, the successful activity of the enterprise will be determined by the degree of satisfaction of the interests of stakeholders, therefore, in order to increase the competitiveness and efficiency

of the enterprise, the enterprise must take into account not only its interests, but also the interests of interested parties, its business partners.

In the theory of stakeholders, the term partnership is used, which forms the conditions for ensuring the effectiveness of the results of the enterprise's activities.

A developing small and medium-sized enterprise, as a tool of competition, needs to form a system of marketing relationships with partners, a system based on mutually beneficial long-term cooperation, which allows to reduce the time for making effective commercial decisions.

Therefore, taking into account the considered methodological foundations of the enterprise competitiveness, a method is proposed for assessing and analyzing the competitiveness of shoe enterprises operating in the regions of the Southern Federal District and the North Caucasus Federal District, based on the theory of stakeholders, namely, Donobuv CJSC (Rostov-on-Don) and LLC "Leonov" (Rostov-on-Don), which are competitors in the production of men's shoes.

Taking into account the analysis of the system of indicators for assessing the competitive potential of an enterprise, we will give an assessment of these enterprises according to the system of indicators for assessing the factors of competitiveness of enterprises proposed above. The first important factor in the competitiveness of an enterprise is the competitiveness of a product.

All calculations are reduced to the implementation of successive stages.

1 stage. Calculation of the significance of consumer properties in assessing the competitiveness of women's outerwear. The significance of consumer properties is proposed to be calculated using the direct assessment method. To do this, a questionnaire is proposed, in which each respondent needs to determine the importance, in his opinion, of each consumer property of a product within the scale used. The weighting factor is calculated separately for each analyzed segment.

At this stage, the significance of consumer properties in assessing the competitiveness of men's shoes is calculated. 50 respondents were interviewed who rated all consumer properties in points.

To do this, we will segment the market and select target segments (Table 1).

Table 1. Characteristics of target segments of men's shoes

Criteria name	Quantity		Segment characteristics
	%	human	
Attitude to fashion	fourteen	7	"Avant-garde"
	76	38	"Moderate"
	ten	5	"Conservatives"

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Age	62	31	"Youth group"
	26	13	"average age"
	ten	5	"Older age"
	2	1	"Venerable age"
Income level	38	19	"below the average"
	50	25	"average"
	12	6	"above the average"
Social status	38	19	"Low social status"
	38	19	"Average social status"
	24	12	"High social status"

The largest number of consumers (76%) are ordinary buyers ("moderate"). Half of the respondents have an average income (50%), although the income level is "below average" (38%) more than three times higher than the number of those with an income "above average" (38% and 12%, respectively).

We group the questionnaires according to the

criterion "attitude to fashion", since this criterion is decisive in consumer preferences (segment-forming). All other criteria (age, income level, social status) are expressed in it.

Based on the results of grouping questionnaires, we build segment profiles (Table 2).

Table 2. Segment profiles of consumers of men's footwear

Segmentation signs	Segments		
	"Avant-garde"	"Moderate"	"Conservatives"
attitude to fashion	Younger - 5 Average - 2	Youngest - 26 Average - 10 Senior - 2	Senior - 3 Venerable - 2
age group	Medium - 3 Above average - 4	Below average - 16 Average - 20 Above average - 2	Below average - 4 Average - 1
income level	Individuality - 6 High quality goods - 1	Individuality - 13 High quality goods - 17 Low price - 8	Low price - 4 High quality product - 1
sought benefits			

Based on the compiled table 2, it can be seen that fashionable products are preferred by respondents who are among ordinary buyers ("moderate") of the younger group, as this emphasizes their individuality, although their income level is below average.

Based on the above data, it is possible to calculate the importance of consumer properties in assessing the competitiveness of a product based on the answers of the "avant-garde" (table 3).

Table 3. Calculation of the significance of consumer properties in assessing the competitiveness of men's shoes based on the answers of the "avant-garde"

Properties	Correspondence fashion direction	Arts. registration	Workmanship	Comfort	Strength	Appearance and quality of the material	Price	Total
	34	32	thirty	31	22	28	29	206
	0.165	0.155	0.146	0.15	0.107	0.136	0.141	1

...
Let us calculate the importance of consumer

properties in assessing the competitiveness of a product based on the answers "moderate" (Table 4).

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Table 4. Calculation of the significance of consumer properties in assessing the competitiveness of men's shoes based on the responses of "moderate"

Properties	Correspondence fashion direction	Arts. registration	Workmanship	Comfort	Strength	Appearance and quality of the material	Price	Total
	154	171	149	169	130	159	167	1099
	0.14	0.156	0.136	0.154	0.118	0.145	0.152	1

Let's calculate the importance of consumer properties in assessing the competitiveness of a

product based on the answers of the "conservatives" (Table 5).

Table 5. Calculation of the significance of consumer properties in assessing the competitiveness of men's shoes based on answers from "conservatives"

Properties	Correspondence fashion direction	Arts. registration	Workmanship	Comfort	Strength	Appearance and quality of the material	Price	Total
	ten	17	19	eighteen	21	twenty	23	128
	0.08	0.133	0.148	0.141	0.162	0.156	0.18	1

2 stage. Selection of experts. The formation of an expert group is carried out on the basis of their self-assessment, by filling out a questionnaire. Trade workers (commodity experts, sellers) act as experts. A total of 10 experts were interviewed. Of these, 5-7 people are selected into the group who have received the maximum amount of marks in all areas. They were asked three questions each. In total, five experts were interviewed, of which four experts received the highest marks in three areas (9 points). They were brought in to study the competitiveness of men's shoes. Then the experts were asked to rate the properties of men's shoes on a five-point scale.

3 stage. Selection of competing products

(assortment) for comparison of competitiveness, the products of those manufacturers are selected that, firstly, serve similar segments, and secondly, are in steady demand in the market.

4 stage. Evaluation of consumer properties of men's footwear (assortment) by target segments.

To compare the consumer properties of assortment groups of different manufacturers, it is also necessary to use a questionnaire. The respondents are asked to give an assessment in points on a five-point scale for each consumer property of the compared groups of goods. The rating scale is indicated in the questionnaire. The results are summarized in the final table 6.

Table 6. Evaluation of consumer properties of men's shoes

Properties	Correspondence fashion direction	Arts. registration	Workmanship	Comfortness	Othersness	External look and quality material	Price
Dono shoes	3.33	3.17	3.67	3.42	3.75	3.83	3.33
Leonov	3.27	2.49	3.37	2.84	3.29	3.31	2.96
Mean	3.3	2.83	3.52	3.13	3.52	3.57	3.145

5 stage. Determination of the average rating for consumer properties for each segment. The questionnaires grouped by target segments are processed as follows.

For each consumer property, the average value of the assessment in points is found as the arithmetic mean for all respondents of this target group. The data are summarized in Table 7.

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Table 7. Average rating of men's footwear by consumer properties of "avant-garde", "conservative"

Properties	Correspondence fashion direction	Arts. registration	Workmanship	Fit on the figure	Strength	Appearance and quality of the material	Price
"Vanguardists"							
Dono shoes	3.33	3.17	3.67	3.42	3.75	3.83	3.33
"Conservatives"							
Leonov	3.27	2.49	3.37	2.84	3.29	3.31	2.96
Mean	3.3	2.83	3.52	3.13	3.52	3.57	3.145

6 stage. Calculation of the total assessment of the competitiveness of the product.

Thus, the total assessment of the competitiveness of the same product, given by representatives of different segments, will differ. To make managerial decisions on competitiveness, the analysis uses the results of assessing the competitiveness of men's shoes, which were put down by representatives of the target segment.

The maximum score for the product coefficient is 5 points.

In fact, the level of competitiveness may be below the maximum mark.

Let's calculate the competitiveness of enterprises, taking into account the significance defined above. We will enter the obtained data into table 8.

Table 8. Analysis of the competitiveness of men's shoes

Properties	Compliance with the direction of fashion	Arts. registration	Manufacturing quality	Comfort-fortitude	Otherness	Appearance and quality of the material	Price	Competitive wayness	Place order
The significance of ai	0.138	0.154	0.138	0.15	0.12	0.145	0.153		
Dono shoes	0.46	0.49	0.51	0.51	0.45	0.56	0.51	3.49	1
Leonov	0.45	0.38	0.47	0.43	0.39	0.48	0.45	3.05	2

According to Table 8, it can be seen that men's footwear of Donobuv CJSC are more competitive than the same range of Leonov LLC.

The rest of the indicators for assessing the competitiveness of enterprises will be taken from the technical and economic indicators of enterprises, data from the balance sheet.

Let us calculate the dimensionless estimates of the indicators of the competitiveness of enterprises and summarize everything in Table 9.

To convert the dimensional estimates of indicators into dimensionless, it is proposed to use the index method. Which was discussed above.

Table 9. Evaluation of the competitiveness of the enterprises of Leonov LLC and Donobuv CJSC specializing in the production of men's shoes

Enterprise competitiveness factors	Indicators	Significance bridge, %	The values		Dimensionless estimates of enterprise competitiveness indicators		Weighted estimates of competitiveness indicators	
			Leonov LLC	Donobuv CJSC	Leonov LLC	Donobuv CJSC	Leonov LLC	Donobuv CJSC
1. Competitiveness of goods	Weighted average for the product range of competitiveness of the goods, score	40	3.05	3.49	0.61	0.69	24.4	27.92

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2.Efficiency marketing	Assessment of the level of partnerships with stakeholders of the enterprise, score	10	2.85	3.05	0.71	0.76	7.10	7.60
	Exceeding the permissible level of Goth stocks. products,%	3	66.50	28.80	0.34	1.00	1.02	3.00
	Market share of the enterprise,%	3	3.00	7.30	0.08	0.20	0.24	0.60
	Sales growth rate,%	3	221.00	198,00	0.89	0.80	2.67	2.40
3. Quality management	Return on investment	3	0.85	4.02	0.08	0.39	0.24	1.17
	Return on total assets,%	3	10.90	43.90	0.17	0.53	0.51	1.59
4. The financial condition of the enterprise	Coefficient of provision Own werewolves. by means (0.2)	3	0.19	0.76	0.95	3.80	2.85	11.40
	Current liquidity ratio (□1.3)	3	1.46	4.16	0.26	0.79	0.78	2.37
	Costs per 1 rub. realiz. products	3	0.69	0.53	0.86	1.00	2.58	3.00
5.Level of organization productions	Capacity utilization rate	2	0.83	0.95	0.87	1.00	1.74	2.00
	Labor productivity	2	48.19	60.22	0.64	0.80	1.28	1.60
	Wear of mains funds,%	2	26.00	47,00	0.38	0.21	0.76	0.42
6.Efficiency MTO	Assessment of relationships with suppliers, score	3	7.28	7.99	0.73	0.80	2.18	2.40
	Material efficiency, RUB / RUB	3	20.45	13.48	0.13	0.12	0.39	0.36
7. Activity of innovators. activities	Share of innovative products,%	8	1.30	0.13	1.00	0.10	8.00	0.80
8. Competitiveness of staff	The coefficient of the outstripping growth of labor productivity in relation to the growth of wages	3	2.06	1.56	0.95	0.72	2.85	2.16
	Personnel turnover rate,%	3	7.00	6.00	0.02	0.03	0.06	0.09
	Total maximum significance score	100	-	-	-	-	59.65	70.88

So, on the basis of the presented data, the generalizing indicators of the competitiveness of the studied enterprises are equal:

for - LLC Leonov:

$$KP = 59.65\%$$

for JSC "Donobuv":

$$KP = 70.88\%$$

As can be seen from the scale for assessing the qualitative level of competitiveness, LLC Leonov and CJSC Donobuv have an average level of competitiveness in the market of footwear enterprises in the Southern Federal District and the North Caucasus Federal District.

Let us analyze the second most important

potential of enterprise competitiveness - marketing efficiency. We will present the data on this potential in Table 9, where we will indicate the weighted estimates at the surveyed enterprises and the maximum estimate for these indicators.

As can be seen from the table 10 below, the deviation in the potential of marketing efficiency in Leonov LLC is -7.97, in Donobuv CJSC -5.4. The greatest influence on this deviation is exerted by the indicator of the level and quality of partnerships with stakeholders, therefore, in order to increase the effectiveness of marketing activities, the studied enterprises should establish and develop relationships with partners.

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Table 10. Analysis of the effectiveness of using marketing potential

Indicators for evaluating the effectiveness of marketing	Significance, %	Weighted estimates of competitiveness indicators		Maximum weighted score	Deviation of the weighted estimate from the maximum	
		OOO Leonov	Company Dono shoes		OOO Leonov	Company Dono shoes
Assessment of the level of partnerships with stakeholders of the enterprise, score	10	7.1	7.6	10	-2.9	-2.4
Exceeding the permissible level of stocks Goth. products,%	3	1.02	3	3	-1.98	0
Market share of the enterprise,%	3	0.24	0.6	3	-2.76	-2.4
Sales growth rate,%	3	2.67	2.4	3	-0.33	-0.6
Total	9	11.03	13.6	19	-7.97	-5.4

So, when assessing the competitiveness of the studied enterprises, it was revealed that the level of competitiveness of LLC Leonov, CJSC Donobuv is average (59.65% and 70.88%, respectively). One of the important factors that influences the assessment of competitiveness is the effectiveness of marketing. The analysis shows that the deviation for this potential is 7.97 in Leonov LLC, and 5.4 in Donobuv CJSC. To improve marketing effectiveness, businesses should implement a stakeholder framework that will foster relationships with partners.

So, in order to increase the competitiveness of the studied enterprises on the basis of the theory of partnership relations, it is proposed to introduce a mechanism for the formation of interaction with stakeholders.

Thus, the theory of partnerships is becoming relevant today, therefore, taking into account the importance of this factor, a methodology for assessing the competitiveness of an enterprise has been developed, taking into account a new paradigm - the theory of partnerships. The developed methodology for assessing and analyzing the competitiveness of an enterprise based on the theory of partnerships allows an in-depth analysis of the competitiveness of enterprises, taking into account an important factor of competitive advantages in a networked economy - the quality and level of development of partnerships.

As the main unique aspects of the formation of the competitive advantage of enterprises on the basis of a theory-oriented partnership, one can single out:

- ❖ creation and permanent expansion of a database of key partners;
- ❖ formation of the necessary technical base (computers, peripherals and software);
- ❖ organization of the activities of the unit and individual managers for managing relationships with stakeholders;
- ❖ development and adjustment of plans for interaction with key partners, taking into account their business and personal characteristics;
- ❖ regular audit of the activities of managers for

managing relationships with partners in the context of assessing the following indicators:

- ❖ the number of meetings with partners, the number of prepared commercial proposals, the number of contracts concluded, the dynamics of the volume of supplies of products attributable to each partner;
- ❖ regular marketing research within the framework of partnerships in order to identify changes in the structure and nature of preferences when choosing partners.

Thus, the above aspects, with the proper level of their elaboration, can allow an enterprise to form a unique competitive advantage - a system of relationships with stakeholders.

Filling technological processes for the production of competitive and popular footwear for consumers in the regions of the Southern Federal District and the North Caucasus Federal District is costly. The use of universal and multifunctional equipment forms the technological process in such a way that it makes it possible to produce the entire assortment of high quality footwear with different price niches, creating priorities for its implementation.

I would like to note one more undoubted merit of the studies carried out by the authors is the fact that, in addition to proposals for manufacturers to use universal and multifunctional equipment for assembling shoe upper blanks and molding upper blanks on a shoe, it is proposed to use the technology of direct casting of the bottom on shoes and such equipment that is capable of both once to ensure the production of the demanded assortment of footwear, both by type and by type, and create the prerequisites for high efficiency of the production itself and satisfy the demand not only of consumers in the regions of the Southern Federal District and the North Caucasus Federal District, but also of domestic and foreign buyers.

Partnerships can be divided into two groups: external and internal. External include: buyers, suppliers, competitors, government agencies and

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organizations, regional and municipal authorities, financial intermediaries.

Buyers. Strategies and tactics for working with important customers include joint meetings to identify the drivers of business change, mutual efforts to develop products and the market, increase communication, use common space, and joint training and service programs. Strengthening customer relationships often provides significant benefits.

Internal partners include managers, employees, owners, and a board of directors or board, which represents managers and owners. One of the most significant internal partners is a senior executive.

Thus, the success of an enterprise is determined by the degree of satisfaction of the interests of interested parties, therefore, in order to increase the competitiveness and efficiency of activities, the enterprise must take into account not only its own interests, but also the interests of interested parties.

Therefore, taking into account the considered methodological foundations of the competitiveness of an enterprise, a methodology for assessing and analyzing the competitiveness of an enterprise based on the theory of stakeholders is proposed.

Stage 1. The choice of indicators for assessing the factors of competitiveness of the enterprise. For each factor, a system of indicators can be determined based on the analysis of scientific literature.

The economic meaning of the obtained generalized assessment of competitiveness is that, on the one hand, it shows the degree of satisfaction with the product, and on the other hand, the degree of use of the competitive potential of the enterprise itself.

The proposed methodology for assessing and analyzing the competitiveness of an enterprise, in contrast to the existing ones, firstly, takes into account the specifics of the "light industry" industry, secondly, reduces the subjective factor in the assessment, and thirdly, allows for an in-depth analysis, thanks to the proposed directions and indicators of analysis competitiveness of enterprises. To conduct a survey to assess the competitive potential, we developed a questionnaire and offered it to respondents - students, masters, graduate students, teachers and specialists - university graduates working at light industry enterprises in the regions of the Southern Federal District and the North Caucasus Federal District. In addition, the questionnaire was accompanied by an explanation and examples of its filling, which are given below.

As the main unique aspects of the formation of the competitive advantage of an enterprise based on the theory-oriented stakeholders, one can single out:

- creation and permanent expansion of the stakeholder database;
- formation of the necessary innovation base (computers, peripherals and software);
- organization of the activities of the unit and

individual managers for managing relationships with stakeholders;

- development and adjustment of plans for interaction with key stakeholders of stakeholders, taking into account their business and personal characteristics;

- regular audit of the activities of managers for managing relationships with stakeholders in the context of assessing the following indicators: the number of meetings, the number of prepared commercial proposals, the number of contracts concluded, the dynamics of the volume of supplies of products attributable to each participant of the interested parties;

- regular marketing research in the process of implementing the developed activities with the participation of stakeholders in order to identify changes in the structure and nature of the preferences of the stakeholders of the stakeholders.

Thus, the above aspects, with the proper level of their elaboration, can allow light industry enterprises to form a unique competitive advantage - a system of effective relationships between stakeholders.

Analysis of the questionnaire survey on the impact of the competitive potential of enterprises in the regions of the Southern Federal District and the North Caucasus Federal District with regret confirmed the lack of consistency of respondents on the criteria for the quality of light industry products formulated in the questionnaires. So, for example, the basic answer, the first expert (table 5), expressed by competent experts, received, according to the survey results, the value of the concordance coefficient equal to (W) 0.34, i.e. less than 0.5. That is, in our case, the fact is confirmed that the survey participants are respondents who are not competent in the problem proposed to them. In this regard, the authors were forced to develop additional changes to the software product, with the help of which the competence of the survey participants - respondents will be additionally assessed and weeding out those who do not have the same opinion with the reference answers,

Tables 11-16 show the calculations of the optimal power for the range from 300 to 900 pairs for the manufacture of men's and women's shoes of the entire assortment. The analysis of the obtained characteristics for the calculated three variants of innovative technological processes for 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, for example, in the range of 300 - 900 pairs, the best according to the given criteria is the production volume of 889 pairs for men's shoes and 847 pairs for women's shoes. If the production areas proposed by the regional and municipal authorities of these districts - the Southern Federal District and the North

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Caucasus Federal District - according to the normative indicators, do not allow the calculated production volumes to be realized, then in this case they have the opportunity to choose the option of the optimal capacity that is acceptable, for example, the production volume of 556 pairs, which will correspond to the normative indicators for the proposed production areas and be characterized by the best values of the indicated criteria,

To confirm the assessment of the effectiveness of the production activities of the created shoe enterprises, we analyzed the annual results of the enterprise for the production of both men's and children's and women's footwear assortment.

These calculations indicate that with 100% of the sale of shoes in the specified period of time, not only the costs of production and sales of products are covered, but also a profit of 3697.4 thousand rubles remains. This confirms the efficient operation of the company, as well as the correct choice of marketing and assortment policies. Since the product profitability is 14.9%.

To prove our proposals, they were confirmed by the results of calculating the technical and economic indicators of their activities using the software developed by us, which made it possible to choose not only production volumes that would guarantee the manufacturer an economic effect, in which the integrated efficiency indicator (K) evaluating his / her would tend to its maximum value, namely, to one, but also to ensure its implementation in the markets of the regions of the Southern Federal District and the North Caucasus Federal District.

Of greatest interest is the fact that the technology of direct casting of the bottom for shoes today, but what is especially important, and tomorrow will be the most effective for the manufacture of the entire range of products. This is possible because today the chemical industry offers manufacturers for direct molding of the bottom of shoes polymer compositions that create conditions to use the entire possible list of materials for the upper of shoes and at the same time guarantee consumers high quality, conformity to fashion trends, functionality and affordability and ensure its competitiveness with similar footwear from leading foreign companies, pushing them out of our markets and creating such footwear priorities, that is, import substitution.

The world footwear market is estimated at 260 billion, the growth rate over the past 5 years was 3.5%. China, USA and India are the largest footwear markets. The specific consumption of footwear in Russia is much lower than the level of developed countries. China is the largest footwear exporter and serves all major global markets.

The main growth drivers of the Russian footwear market are an increase in the specific consumption of footwear per person and a decrease in the average cost of a pair. Russia lags far behind in consumption of

footwear from developed countries (3 pairs per year in Russia against 5-6 in Europe and 7-8 in the USA). By 2025, this figure may increase to 4 couples per person. The average price of a pair by 2025 may increase from 1200 to 1500 rubles at current prices. In 2020, the consumption of footwear in Russia was estimated at 0.81 trillion. rub.

By analogy with garment production, the main factors determining the competitive advantage of a manufacturer are the availability and increase in the volume of domestic raw hides, access to a cheap and productive labor force, access to materials and functional components of shoes (insoles, pads, accessories, etc.), as well as access to sales markets.

The share of labor costs in shoe production is slightly lower than in sewing, but the main problem today and tomorrow for Russian shoe manufacturers is the difficulty in accessing materials and functional components.

The cost of manufacturing footwear in Russia is 1.5 times higher than in China, and the cost of components is 35% more expensive, since they are imported from China at inflated prices due to small order volumes, the cost of labor in Russia is 2 times more expensive than in China ...

Opportunities to reduce the effective cost by reducing the delivery time in footwear production are possible only if you provide quick access to materials and components, but the need to import them from Asia does not allow Russian manufacturers to achieve advantages in terms of time. The use of natural leather made in Russia and an increase in the production of leather footwear will reduce delivery times and partly costly components. Another possible tool for solving the problem with components can also be the creation of purchasing alliances - the consolidation of orders for components can reduce their cost by 20%. By analogy with the segment of technical textiles, shoe production in the world is developing in the format of innovation centers / industrial parks, with a large number of highly specialized players.

Shoe production development strategy - consolidation and development within the framework of innovation centers. The main directions of state policy, in addition to those indicated above, to create equal competitive conditions in the footwear market:

- support for the creation of industrial infrastructure within innovation centers;
- support for the creation of industrial innovation centers by large shoe manufacturers and SMEs to achieve economies of scale and synergies;
- support for the modernization of production to increase labor productivity;
- ensuring favorable access for manufacturers to functional components;
- support for the creation of purchasing alliances for functional components;
- further, support for the partial localization of

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component manufacturers within the shoe innovation centers.

The total volume of domestic footwear production in the Russian Federation by 2017 may reach 310-340 billion rubles (in producer prices), which will correspond to 60% of localization. At the same time, up to 20% of the increase in footwear production will be provided by special and protective products. The estimated volume of required investments in the industry is 95-120 billion rubles, up to 30-50 thousand new jobs can be created. The development of the garment industry will add 0.05% to GDP and provide 36-58 billion rubles. tax revenues. The cumulative effect from the development of clothing and footwear production in the Russian Federation will amount to 0.11% of GDP (0.06% from the development of clothing production, 0.05% from footwear production). The total amount of required investments is 180-270 billion rubles. 160-200 thousand new jobs will be created. The expected volume of tax revenues by 2025 is 124-162 billion rubles.

For the strategic management of the production of products in demand, it is necessary: study the demand for manufactured footwear and, together with sales, production and supply specialists, develop solutions for the removal of models from production and renewal of the assortment; explore sales markets in different regions and various forms of sales organization, study potential buyers; study the reaction of buyers to experienced batches of shoes in specialized stores; jointly with the planning and economic department to develop regulations on their own pricing policy; study the impact of selling prices for different regions; develop a policy of motivating wholesale buyers for the volume of orders, the duration of contracts, etc.; predict possible changes in the situation and develop decisions on the strategy of behavior in new conditions; coordinate conflicting production and marketing requirements; organize and study the effectiveness of advertising activities. You can imagine yourself as a manager of the company "Donobuv", which opened a new shop and chose a new strategy for the production and promotion of footwear in the regions of the Southern Federal District and the North Caucasus Federal District. Here's what can happen. The main markets for the sale of products of JSC "Donobuv" today are Moscow and the Moscow region. The initial data, which is formed by the manager of the enterprise for the board of directors of the enterprise, is to prepare a draft future strategy for choosing a certain type of footwear, namely:

- produce expensive shoes for a high-income target audience (item A);
- specialize in the production of inexpensive shoes for a target audience with earnings above the subsistence level (product B);

- to produce cheap footwear for socially unprotected strata with earnings below the subsistence level (product C).

In the future, the following scenarios of the development of the external environment are possible, the likelihood of which is assessed by the management of the enterprise as follows: an increase in purchasing power (scenario S1, probability of occurrence - 0.2); the invariability of the purchasing power of the population and the influence of foreign competitors (scenario S2, probability of occurrence - 0.5); decrease in purchasing power due to rising inflation with constant competition (scenario S3, probability of occurrence - 0.3).

Additional information for making the necessary calculations:

- living wage - 12691 rubles.
- daily release - 576 pairs of shoes;
- number - 100 people, who are engaged in the production of 576 pairs of shoes per day;
- with a working week of 5 days, the total number of working days in a year is 250 days;
- monthly production of shoes - 12,000 pairs;
- annual production of shoes 144,000 pairs.

We will assume that the average cost of one pair of shoes with unchanged purchasing power (scenario S2) will be characterized by the following values: the price of a pair of expensive shoes for a target audience with high earnings is 5 thousand rubles; the price of a pair of shoes for the target audience with earnings above the subsistence level - 2 thousand rubles; the price of a pair of cheap shoes for socially unprotected strata with earnings below the subsistence level - 1 thousand rubles.

The total volume of shoe sales, given the unchanged purchasing power (scenario S2) for the audience in question, will be:

- when selling expensive shoes for a target audience with high earnings - 60 million rubles. per month;
- when selling footwear to a target audience with earnings above the subsistence level - 24 million rubles. month;
- when selling cheap footwear for socially unprotected strata with earnings below the subsistence level - 12 million rubles. per month.

For the target audience with an increase in purchasing power (scenario S1), the price of one pair of expensive shoes will be 5 thousand rubles, the price of one pair of shoes for the target audience with earnings above the subsistence level will be 3 thousand rubles, the price of one pair of shoes for non protected layers - 1 thousand rubles, with a reduced purchasing power (scenario S3), the price of one pair of expensive shoes will be 2.5 thousand rubles, the price of one pair of shoes for the target audience with earnings above the subsistence level - 1 thousand

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rubles, the price of one pair of shoes for unprotected layers is 500 rubles.

For each of the considered scenarios, the volume of shoe sales per month was calculated. We calculated the sum of the mathematical expectations of the sales volume, taking into account the probability of three scenarios. Enterprise managers, based on the analysis or their experience (intuitively), assess the likelihood of a particular situation.

Separately for each strategy, the sum of the mathematical expectations of the volume of sales is determined as the product of the volume of shoe sales per month in the implementation of each scenario by its probability.

By calculating the amount of mathematical expectation, the sales volume, the maximum sales volume was gained by the strategy of producing expensive shoes for a target audience with high earnings.

Summarizing the information obtained as a result of the study, a structural diagram of the formation of the mentality has been drawn up. The proposed structuring can be used when planning the industrial assortment for the regions of the Southern Federal District and the North Caucasus Federal District. And only in the interconnection of all the factors considered above, it will be possible to assert the high stability of the financial results of the activities of shoe enterprises in the regions of the Southern Federal District and the North Caucasus Federal District, united into an innovation center.

The assortment of children's shoes should target buyers with different income levels, for this, in the manufacture of shoes, it is necessary to use leather for the upper of different quality: expensive, such as chevro, or cheaper chrome-tanned pork leather, from which shoes can be worn out, and coming home to take pictures so that the child's legs would rest.

Also, when developing the assortment, it is necessary to take into account the fact that more girls are born in the Southern Federal District and the North Caucasus Federal District than boys, so shoes for girls should be produced in a larger volume than shoes for boys.

If manufacturers of footwear for children are guided by all of the above recommendations of the authors, then buyers will have the opportunity, depending on their financial situation, to give preference to products of a particular price category, made taking into account the climatic characteristics of the Southern Federal District and the generic characteristics of its population.

The main place among the attributes of any enterprise is occupied by the name with which the enterprise goes public. We know the company not by the legal phrase that is recorded in the corresponding registration documents (and it happens to be unfamiliar to a wide range of consumers), but by the trademark of its products. So, a rare consumer knows

that the shoes of the Belka Trading House are Ralf Ringer. Most manufacturers of the Southern Federal District do not have a name (trade mark).

There are several ways to form a name, a logo and a trademark.

The most common way is to choose a proper name. Typical for fashion houses (luxury goods) - the name of the company founder CHRISTIAN DIOR, CHANEL, GIVENCHY, YVES SAINT LORAN etc. The unique taste, bright style expressed the personality of the artists in their creations, subsequently giving the things released under this name a high status. This technique has become necessary if an individual or family company is being created and it is required to emphasize the personal role of the owner, and build the reputation and policy of the company on his reputation. With this approach, the role of the individual is invaluable. The surname should become a guarantor of product quality and business conduct. Accordingly, if there is an owner's image, it is not only directly related to the company's image, but also carries the main emotional load.

Another way is that the commercial name of the enterprise is based on an abbreviation formed from the first letters of the official name. This achieves the conciseness of the name and ease of pronunciation and memorization, respectively. It can be clearly traced that the abbreviation is an excellent means of obtaining a logo - the LVMH / Louis Vuitton Moet Hennessy / company. The same method is used by companies positioning their products in the "Bridge better" class, representing the second line of well-known houses; the title contains a reference to the artist's name associated with his luxury line "couture" and "preta - porte de lux" and an abbreviation. For example, Mani (Armani), DKNY (Donna Karan New Your), CK Jeans (Calvin Klein).

The second - much less common in the fashion industry - is the formation of a name by connecting the root fragments of several words, which are not necessarily present in the name of the company. But in this case, associations with the profile of the firm are desirable. The requirement, like any other group of names, is unusual and euphonious.

The third way is the formation of a new word, not similar to existing meaningful words, but associated with positive concepts. Most often, the positioning of these companies is associated with the bridge middle class, bridge low class and moderate and buget class mass clothes.

For example, the name of the company "Skorokhod" is the production of children's shoes. Saying "Skorokhod", you can provoke an association with fast movement, and children love to run, they need high-quality and strong shoes.

Another example is the name of the company MEXX. There are no close associations, but the name is modern and laconic. It agrees well with the positioning of the company - clothes for young people

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according to the ideal combination of "style, price and quality".

It is necessary to note the huge number of names that use the Latin alphabet when writing their names. It seems to us that the roots of this phenomenon lie in the statements - the legacy of the Soviet era: "there is no fashion in Russia!", "Domestic means bad". Accordingly, domestic enterprises that were the first to enter the post-Soviet market were forced to disguise themselves as foreign manufacturers. Gregory, Gloria Jeans, Climona, Vereteno, Festival, ZARINA are numerous examples of this strategy when choosing a company name.

The fourth way is the company logo. The purpose of a logo in the fashion industry is to instantly recognize the brand. A logo is a symbolism that replaces a name or is its graphic interpretation. Interestingly, in the fashion world, the logo has also become a part of clothing and footwear design.

The logo serves as an identification mark for the uninitiated crowd, who by these letters will know how much a particular item cost. This is a cheat sheet for those who cannot define the silhouette of Dolce and Gabanna, Christian Dior or Ferre. With the general trend towards more and more visualization, font graphics are all kinds of pointers. Plates and labels - began to play an increasing role. The logo, as an image replacing the text, becomes an ideal solution if you need to combine decorative and informative content.

In addition to its primary function - a trademark - it plays a decorative role.

This is a natural result of the interweaving of the fashion industry and advertising.

Here are the reasons: the first - industrial - fashion for text as a decorative element. The second is the fashion for democratic clothing, i.e. a crisis in the recognition of styles, the binding of an object to a specific brand. The third is pro-advertising. This shift in the "expensive - cheap" framework: it is the design of the product, and not the quality of the materials used or the amount of manual labor, that increasingly determines the consumer value. The oversaturation of advertising information makes it possible for logos to become an element of decor.

The logo is becoming more imaginative and emotional. And you can play with the images, placing it where it was previously unthinkable. Thus, today buyers of fashionable footwear have been made advertising carriers of brands due to universal logoization.

The main thing is the correspondence of the emotions caused by the advertising of the product, the brand image and the design of the products themselves.

After all, the promotion of the subject should be specific, simple, understandable and vivid, i.e. advertising. At the same time, carry a readable emotionally colored image. This means that you can't do without a logo.

The verbal logo of the enterprise - a name inscribed in a certain way is its most frequently used attribute, which forms the first emotional attachment to the image of the company in the mind of the consumer. A certain way of depicting a verbal logo becomes a distinctive, original feature of an enterprise.

Another important direction in the company's activities to promote its brand is the design in the trade environment. The following requirements are imposed here:

- Convenient location for a specific target audience (Via Corso - a boutique street in Milan; and Piazza il Duomo with La Rinascente department store - both conveniently located in the center of Milan, but the consumer of these retail spaces is different). As mentioned above, a similar community of boutiques selling footwear will be created in Russia on the basis of the Paris Commune factory. The need for such a base exists in the Southern Federal District and the North Caucasus Federal District - this will allow organizing the regional market;

- Compliance with the concept of presenting the image of the product, i.e. well-thought-out principles of presenting the properties of a product that correspond to the expected motivation of its choice by the consumer;

- Figuratively, the target solution of the environment should be oriented towards the type of consumer. It should be possible to try on shoes, get advice from the seller;

- The environment should be conducive to stay and provoke interest in the product. Pleasant music can sound in the store; each visitor should be given a booklet with shoe brands;

- According to the figurative decision, the environment should be lifted above the ordinary, create a feeling of "event", "chosenness", "fullness of possibilities" or "accessibility". An enterprise can introduce a system of discounts to re-attract consumers;

- Maintain an additional range of services that fall within the range of the consumer's pastime and cultural interests. The buyer can be offered a cream for a newly purchased shoe or another clothing accessory with the manufacturer's logo as a gift.

Consumers in the marketplace are not a monolithic community. When buying shoes, they are guided, first of all, by the type of shoes and the price.

For example, when choosing women's boots, the buyer takes into account the seasonality of the shoes, their age characteristics and the type of work, the appearance of the shoes will be important signs: compliance with the fashion direction, color, materials of the top and bottom, as well as the constructive solution of the model. Buyers will also prefer the brand name. It is this offer of footwear to the consumer in specialized stores or departments that

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will provoke an increase in sales in conditions of unstable demand. And if the seller, possessing well-thought-out principles of presenting the advantageous properties of each design of women's boots, and guessing the mood and capabilities of the customer by their motivated questions when choosing a model, will be able to realize this very desire, then in any case the buyer will leave satisfied that his interests are fully satisfied, and he himself,

Elderly people love comfort and coziness. Both the seller and the buyer are a representative the beautiful half - of course, they will turn their attention to the model if it will be pleasant to wear it in a snowy winter, since it should be made of soft nap leather - velor and have a molded sole with a large tread, as it will be very comfortable and provide them with comfort in any period of her wear. Moreover, it should be affordable.

Business women, whose age is over 45 and up to 45, and who are constantly in the hustle and bustle, of course, will give preference to models made from natural materials, low heels, discreet accessories, creating comfort for the wearer in their daily life, while emphasizing their image and social status.

The appearance in the salon or in a special brand store of fashionistas or high school girls will immediately attract the attention of the salon seller, who will want to offer them only an original model with an especially high heel with patch straps, decorated with hoovers and fixed in the upper and lower part of the bootleg. The fashionista will be delighted that she bought what she wanted, and the high school student will be satisfied with the purchase also because she is sure that this purchase will surprise her friends, and for her, this is the most important argument in favor of the purchase.

It is always easy for the seller if a "socialite" appears in the store, as she always prefers only new products or exclusive models. These ambitions of her can be satisfied by the model both due to the originality and due to the constructive solution, also due to the selected materials and decorations in the manufacture of this very model.

For girls who love severity, but at the same time originality, the seller will certainly offer a model in which materials of two colors and textures are successfully combined, and the details, perforated, draped on the bootleg, give it an uniqueness.

And the price should not "bite" very much, which is also an important argument in favor of the purchase. These fantasies of ours, spied on in life and working very effectively on demand, are justified and have the right to be, since the ability to present our products, work with our consumers, a competent marketing approach form the popularity of this boutique, store or salon among buyers and provide them with sustainable consumer demand ... Ultimately, well-thought-out principles of presenting the properties of the goods, the choice of your consumer, the correct design of boutiques and their windows - all this will significantly influence the effective results of their work. The same fully applies to the children's assortment.

In a market economy, in order to survive in a constantly changing economic environment, shoe enterprises need to focus on the target audience:

- an increase in the amount of profit as a result of a company in the volume of sales of products, a decrease in its cost price and an increase in product quality.

In order to get the desired profit in conditions when the prices for shoes and production volumes are dictated by the market, the company always faces the choice of what products and how much to produce in terms of the costs of manufacturing them and taking into account the solvency of potential buyers.

The availability of high-quality, competitive footwear is a prerequisite for the highly efficient functioning of a footwear enterprise.

An important criterion for the competitiveness of footwear on the market is its cost with its corresponding quality and the purchasing power of the population.

The main criterion for the viability and profitability of an enterprise is profit; in order to increase losses, first of all, it is necessary to reduce the cost of shoes.

The change in the total cost, which includes all the costs of manufacturing and selling footwear, depends on the ratio of changes in costs for each calculation item.

An important factor affecting the level of costs for the production of footwear is a change in the assortment and technological process (tables 11-15)

Table 11. Calculation components for the entire range of footwear

Indicators	Type of footwear	Types of shoes			
		Spring	Summer	Autumn	Winter
Cost price units of production, rub.	Mens	856.77	643.72	998.5	1007.07
	Womens	933.51	844.31	1062.37	2107.29
	Children	551.05	503.89	586.15	795.41
Costs for basic materials, rub.	Mens	541.61	378.64	623.16	660.42
	Womens	523.71	511.6	618.52	1503.57

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Expenses for auxiliary materials, rub.	Children	235.78	200.05	280.76	415.5
	Mens	23.82	17.57	28.16	30.4
	Womens	22.65	17.05	24.31	43.16
Wage	Children	11.78	7.92	12.16	15.26
	Mens	141.02	108.28	161.1	150.71
	Womens	148.92	84.62	139.09	220.58
Unit profitability, rub.	Children	58.44	55.42	68.95	95.77
	Mens	10.75	14.65	13.36	15.12
	Womens	11.88	13.37	16.42	17.11
Costs per 1 rub. marketable products, rub.	Children	9.53	8.39	9.19	10.72
	Mens	82.88	85.35	86.64	84.88
	Womens	88.12	86.63	83.57	82.89
	Children	90.47	91.62	90.8	89.28

Table 12. Financial results of the activity of the enterprise selling children's shoes

Month	Release, steam	Costs, rub.			Cost, rub.	Commercial products (at wholesale price), rub.	Profit, rub.
		The main and subsidiary materials	The main and additional salary with SVVF	Overheads			
I quarter - spring (56) - (15 + 19 + 22)							
January 3909699.75	7095	1756438.2	414631.8	1,738,629.75	3909699.75	4321564.5	411864.75
February 4976286.35	8987	2,248,821.72	525200.28	2202264.35	4976286.35	5473981.7	497695.35
March 5734226.3	10406	2576109.36	608,126.64	2549990.3	5734226.3	6338294.6	604068.3
I quarter 14620212.4	26488	6581369.28	1547958.72	6490884.4	14620212.4	16133840.8	1513628.4
II quarter - summer (62) - (21 + 20 + 21)							
April 5587132.32	11088	2305971.36	614496.96	2666664.0	5587132.32	6098400.0	511267.68
May 5321078.4	10560	2196163.2	585235.2	2539680.0	5321078.4	5808000.0	486921.6
June 5587132.32	11088	2305971.36	614496.96	2666664.0	5587132.32	6098400.0	511267.68
II quarter 16495343.04	32736	6808 105.92	1814229.12	7873008	16495343.04	18004800.0	1509457
III quarter - autumn (66) - (24 + 23 + 22)							
July 5933010.3	10122	2964936.24	697911.9	2270162.16	5933010.3	6533751.0	600740.7
August 6498058.9	11086	3247311.12	764379.7	2486368.08	6498058.9	7156013.0	657954.1
September 6215534.6	10604	3106123.68	731145.8	2378265.12	6215534.6	6844882.0	629347.4
III quarter 18646603.8	31812	9318371.04	2193437.4	7134795.36	18646603.8	20534646.0	1888042.2
IV quarter - winter (64) - (21 + 21 + 22)							
October 7266070.35	9135	3934992.6	874858.95	2456218.6	7266070.35	8138371.5	872301.15
November 7266070.35	9135	3934992.6	874858.95	2456218.6	7266070.35	8138371.5	872301.15
December 7612073.7	9570	4122373.2	916518.9	2573181.6	7612073.7	8525913.0	913839.3
IV quarter 22144214.4	2740	11992358.4	2666236.8	7485618.8	22144214.4	24802656.0	2658441.6

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In a year 71906373.64	188876	34700204.64	8221862.04	28984306.56	71906373.64	79475942.8	7569569.16
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Table 13. Financial results of the enterprise for the sale of women's shoes

Month	Release, steam	Costs, rub.			Cost, rub.	Commercial products (at wholesale price), rub.	Profit, rub.
		Basic and auxiliary materials	Main and complementary Naya ZP with SVVF	Overhead expenses			
I quarter - spring (56) - (15 + 19 + 22)							
January 2856754.8	3060	1,671,861.6	455695.2	729198	2856754.8	3241519.2	384764.4
February 3618556.08	3876	2117691.36	577 213.92	923650.8	3618556.08	4105924.32	487368.24
March 4205419.04	4488	2,447,575.68	688352.96	1069490.4	4205419.04	4754228.16	548809.12
I quarter 10680729.92	11424	6237128.64	1721262.08	2722339.2	10680729.92	12101671.68	1,420,941.76
II quarter - summer (62) - (21 + 20 + 21)							
April 4503549.54	5334	2819819.1	451363.08	1232367.36	4503549.54	5198409.72	694860.18
May 4289094.8	5080	2685542.0	429869.6	1173683.2	4289094.8	4950866.4	661771.6
June 4503549.54	5334	2819819.1	451363.08	1232367.36	4503549.54	5198409.72	694860.18
II quarter 13296193.88	15748	8325180.1	1,332,595.76	3638417.92	13296193.88	15347685.84	2051491.96
III quarter - autumn (66) - (24 + 23 + 22)							
July 4038068.37	3801	2,461,033.47	528681.09	1048353.81	4038068.37	4831793.19	793724.82
August 4422646.31	4163	2,695,417.61	579031.67	1148197.03	4422646.31	5304452.97	881806.66
September 4230357.34	3982	2578225.54	553856.38	1,098,275.42	4230357.34	5061878.58	831521.24
III quarter 12691072.02	11946	7734676.62	1,661,569.14	3294826.26	12691072.02	15185635.74	2494563.72
IV quarter - winter (64) - (21 + 21 + 22)							
October 7169000	3402	5261975.46	750413.16	1156611.96	7169000.58	8649 142.74	1480 142.16
November 7169000	3402	5261975.46	750413.16	1156611.96	7169000.58	8649 142.74	1480 142.16
December 7510381	3564	5512545.72	786 147.12	1211688.72	7510381.56	9061006.68	1550625.12
IV quarter 21848382	10368	16036496.64	2,286,973.44	3524912.64	21848382.72	26359292.16	4510909.44
In a year 58516378	49489	38333482.0	7002400.42	13180496.02	58516378.54	68994285.42	10477906.88

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Table 14. Financial results of the enterprise for the sale of men's shoes

Month	Release, steam	Costs, rub.			Cost price, rub.	Commercial products (at wholesale price), rub.	Profit, rub.
		Basic and auxiliary materials	The main and additional bodily ZP with SVVF	Overhead expenses			
I quarter - spring (56) - (15 + 19 + 22)							
January 3,662,091.75	4275	2417213.25	602860.5	642618.0	3662691.75	4419495	756803.23
February 4639409.55	5415	3061803.45	763,623.3	813982.8	4639409.55	5598027	958617.45
March 5371947.9	6270	3545246.1	884195.4	942506.4	5371947.9	6481926	1109978.1
I quarter 13674049.2	15960	9024262.8	2250679.2	2399107.2	13674049.2	16499448	2825398.8
II quarter - summer (62) - (21 + 20 + 21)							
April 3794943.0	5901	2338035.21	638,960.28	817347.51	3794343.0	4450711.23	656368.23
May 3613660.0	5620	2226700.2	608533.6	778426.2	3613660.0	4238772.6	625112.6
June 3794343.0	5901	2338035.21	638,960.28	817347.51	3794343.0	4450711.23	656368.23
II quarter 11202346	17422	6902770.62	1886454.16	2413121.22	11202346	13140195.06	1937849.06
III quarter - autumn (66) - (24 + 23 + 22)							
July 4792159.49	5292	3219403.02	429542.11	1143214.35	4792159.49	6099030	1,306,870.51
August 5249555.63	5796	3526012.83	470450.89	1252091.91	5249555.63	6679890	1430334.37
September 5020357.56	5544	3372707.92	449996.5	1197653.14	5020357.56	6389460	1369102.44
III quarter 15061072.68	16632	10118123.77	1349989.5	3592959.4	15061072.68	19168380	4107307.32
IV quarter - winter (64) - (21 + 21 + 22)							
October 4419723.0	4389	3032008.98	661466.19	726247.83	4419723.0	5207109.6	787386.6
November 4419723.0	4389	3032008.98	661466.19	726247.83	4419723.0	5207109.6	787386.6
December 4630186.0	4598	3176390.36	692964.58	760831.06	4630186.0	5455067.2	824881.2
IV quarter 13469632.0	13376	9240408.32	2015896.96	2213326.72	13469632.0	15869286.4	2399654.4
In a year 53407099.87	63390	35285565.51	7503019.82	10618514.54	53407099.87	64677309.46	11270209.59

Table 15. Impact of the sale of footwear on the financial condition of the enterprise

Volume of sales, %	Men's footwear				
	100%	80%	60%	48%	40%
Profit / Loss per month, rub.	824881.2	207739.04	190596.51	0	- 126545.78
Income tax, 20%	164976.22	41547.8	38119.3	-	-
Property tax, 2.2%	3483.3	3483.3	3483.3	3483.3	3483.3
Net Profit / Losses per month, rub.	656421.7	162708	148994	- 3483.3	- 3483.3
Profit / Losses for the year, rub.	9898574.4	2,492,868.48	2287158.12	0	- 1518549.36

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Net Profit / Losses per year, rub.	7877060.4	1952496	1787928	-41799.6	- 41799.6
Women's shoes					
Volume of sales, %	100%	80%	60%	44%	40%
Profit / Loss per month, rub.	1550625.12	998162.35	445699.56	0	-106763.19
Income tax, 20%	310 125.02	199632.47	89139,912	-	-
Property tax, 2.2%	3483.3	3483.3	3483.3	3483.3	3483.3
Net profit / loss per month, rub.	1237017	795046.6	353076.3	-3483.3	- 3483.3
Profit / Losses for the year, rub.	18607501	11977948	5348395	0	-1281158.28
Net Profit / Losses per year, rub.	14844204	9540559	4236916	-41799.6	- 41799.6
Children's shoes					
Volume of sales, %	100%	90%	83%	80%	-
Profit / Loss per month, rub.	511267.68	495905.15	0	-416365.49	-
Income tax, 20%	102253.54	9918103	-	-	-
Property tax, 2.2%	3483.3	3483.3	3483.3	3483.3	-
Net Profit / Losses per month, rubles	405,530.84	39668929	- 3483.3	- 3483.3	-
Profit / Losses for the year, rub.	6135212	49590515	0	- 4996385.88	-
Net Profit / Losses per year, rub.	4866370	39668929	- 41799.6	- 41799.6	-

The data in tables 11-15 indicate that with 100% of the sale of footwear, compensation of costs is provided not only for the production and sale of footwear, but also a net profit remains, which indicates the effective operation of the enterprise for the analyzed month, as well as the correct marketing assortment policy of the enterprise ... This result of work will allow the company to distribute net profit for the formation of a financial reserve, payment of dividends, development of production, financing of social programs, etc.

When the sale of this type of footwear is not in full, then such a result negatively affects the performance of the enterprise. In this case, the presence of leftovers of non-salable footwear reduces the total amount of revenue, increases costs and leads to additional costs for storing goods.

In addition, from tables 11-15 it can be seen that if men's shoes are sold below 48%, women's - 44%, and children's shoes - 83%, then the enterprise suffers losses, which leads to the need to reduce the volume of production, delay the payment of wages to workers, etc. ...

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 20%), loan repayment terms have been reduced, etc., leading to an even greater increase production costs.

In market conditions of management, an effective management system requires a rational

organization of sales activities, which largely determines the level of use of production means at the enterprise, an increase in labor productivity, a decrease in production costs, an increase in profits and profitability. This is due to the fact that sales activities are not only the sale of finished footwear, but also the orientation of production to meet the solvency of buyers' demand and active work in the market to maintain and generate demand for the company's products, and the organization of effective distribution and promotion channels.

In a dynamically changing market environment, the results of an enterprise, including a shoe, largely depend on the effective results of production, sales, financial and marketing policies of the enterprise itself, which creates the basis for bankruptcy protection and a stable position in the domestic market.

Thus, when developing an assortment policy, shoe enterprises should focus both on external (price and consumer niche, competing enterprises, market environment, etc.) and internal factors, such as sales volume, profitability, coverage of basic costs, etc. However, it is impossible take into account and provide for all situations that may arise when selling shoes, i.e. some shoe models are not 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

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is necessary to reduce too large stocks, get rid of damaged, defective shoes, eliminate leftovers,

In addition to using discounts, an enterprise can initiate a price reduction in case of underutilization of production capacities, a reduction in market share under the onslaught 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, contributes to an increase in 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 lower prices, and most importantly, creates such conditions for the functioning of the market,

The assortment policy is to develop the implementation of decisions regarding the range (names) of products, the variety of assortments of one name, the need to expand the assortment.

To determine the volumes of the expected demand by consumers for new products and to ensure a balance between supply and demand for shoe enterprises, it is advisable to use the method of expert assessments.

A survey of experts (trade and industry specialists) is carried out when samples of new products are ready for examination.

Based on the results of the expert survey, a final report is drawn up, where the expected volumes of demand for the company's products are determined. On the basis of these forecast recommendations, a survey of consumers and the production capabilities of the enterprise, an optimal assortment structure is drawn up.

One of the most difficult issues in the methodology of expert surveys is the selection of experts and the formation of a commission of experts with the highest degree of consistency of opinions and a high level of competence.

The level of competence is a key criterion for the selection of experts - a subjective concept, a unified methodology for assessing the competence of experts has not been developed.

To form an optimal assortment policy and demand for the products of a shoe company, it is proposed to use one of the methods for assessing the competence of experts, which is based on the calculation of the coefficient of competence K_j .

The values for assessing the competitiveness of an enterprise can theoretically vary from 0 to 100:

$$K_p = 0 \div 100 \quad (3)$$

When calculating dimensionless assessments of the indicators of the competitiveness of enterprises using software, it becomes necessary to formulate these very criteria as their evidence base. So, for

example, the profit per unit of production is calculated depending on the profitability of the product, that is, first the size of the profitability is formulated from 5% to 25%, and then the size of the profit per unit of production is laid down. The same feature exists with the definition of the labor productivity criterion, because at first they use innovative technological processes formed on the basis of universal and multifunctional equipment, the maintenance of which must be entrusted to highly qualified and responsible performers who empathize with the overall result of the entire technological cycle, guaranteeing them the production of demanded and competitive products, which are in high demand among consumers on domestic markets. Calculation of conditionally fixed costs for the production of a unit of product and conditionally variable costs for the production of a unit of production is interconnected with the peculiarities of organizing the production of competitive and demanded products, including for children. Analysis of the results of the activities of leading foreign manufacturers confirms the fact that if the conditionally fixed costs are 20% - 40% of the production cost, then, naturally, the conditionally variable costs are 60% - 80%. products for children, when and profit, profitability, conditionally fixed costs and conditionally variable costs are formed on the basis of the implementation of the requirements of technical regulations and normative documents and acts that guarantee the safety of life when using them. And if this is due to the need to produce them with such stringent characteristics, the state and manufacturers are obliged to be interested in each other and provide manufacturers with compensation for the additional costs of observing them and guarantee that the manufactured products will not harm the health of children.

Of course, if the criterion for the loss of wages per unit of production should tend to zero, and the volume of footwear production from 1 m² - to its maximum possible value, and the costs per 1 ruble of marketable products should tend to their minimum possible value and the cost of equipment per unit of flow assignment also strive for its minimum possible value, and other criteria - for their maximum possible value - in the aggregate, a dimensionless assessment of the effectiveness of the developed innovative technological processes (K) should always strive for unity and thereby always confirm that the designed innovative technological process for the enterprise for the production of it import-substituting products will be successful in their activities for the benefit of the population of the regions where they will operate, being city-forming for these small medium-sized cities and in which all branches of government are interested - both federal and regional and municipal.

Thus, the software developed by the authors for assessing the effectiveness of the formed innovative

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technological processes for the production of an import-substituting assortment of shoes, taking into account the calculated calculation components for the production of the planned assortment, allows us to make a justified decision on its launch, a decision on its balance, guaranteed demand and ensuring the enterprise a stable financial position.

In addition, the developed software allows the regional and municipal branches of government, together with future manufacturers of the entire assortment of footwear in single-industry towns, to form the volume of footwear production not only taking into account their needs, but also to guarantee enterprises a stable financial condition by providing them with stable TPP, that is, they will the foundations have been created for the formation of new jobs with the simultaneous solution of all social problems, which, unfortunately, are characteristic today of most of such small and medium-sized cities of the Russian Federation.

The choice of technology that can effectively implement the intended goals in the conditions of fierce competition will provide a guarantee that the developed range of footwear will be chosen by the buyer and will allow the enterprise to get the maximum profit.

To solve this problem, it is necessary to most widely use the injection method, which ensures the manufacture (production) of the entire assortment of high quality footwear with different profitability of certain types of footwear to meet the demand of various groups of the population.

In the cost of footwear production, the largest share is made up of costs for raw materials and basic materials, and then for wages and depreciation deductions.

The authors believe that the benefits direct casting of the bottom of shoes will undoubtedly interest manufacturers to produce such an assortment that will not only meet the fashion trends, but what is especially important - meet the demand, taking into account their functional requirements for the shoes themselves, namely, for athletes, for recreation, for the elderly, for people with minor pathological deviations of the foot, creating comfortable conditions for them and meeting the demand for it, covering the deficit by varying the price of it.

One of the conditions for the competitiveness of an enterprise is the organization of effective interaction with parties interested in the successful functioning of this enterprise. Each enterprise, even small ones, has several groups of subjects with different interests, with which it can be in temporary or permanent cooperation. The research of the authors is devoted to the study of these interests, ways of solving problems arising between external and internal participants, and the establishment of relationships between partners, in order to guarantee to all interested parties the implementation of the main

principle - the interests of all parties are legitimate and require their satisfaction and respect.

The production of footwear by the injection method is possible with the use of artificial and synthetic leather and textile materials, which will reduce the cost and get a large profit, because the assortment of these materials is cheaper and much more diverse, which means that the entire range of footwear will be more in demand, which, in the end, forms this very efficiency of the enterprise.

Making a profit is the main goal of any entrepreneurial activity. Currently, there is fierce competition in the field of business and entrepreneurship, it is necessary to be able to calculate future profits, calculate possible losses.

The net profit indicator reflects the final result of the firm's activities, shows how profitable the implementation of this type of activity is. Net profit is used by entrepreneurs to increase working capital, form various funds and reserves, as well as for reinvestment in production. The amount of net profit directly depends on the size of the gross profit, as well as on the amount of tax payments.

A number of taxes are related to the financial results of economic activities of enterprises: income tax, property tax.

The rules for taxation with income tax are defined in Chapter 25 of the Tax Code of the Russian Federation.

1) The corporate income tax rate (Federal tax) is 20%, of which: 2% is credited to the federal budget, and 18% to the regional one.

2) The tax on the property of organizations (Regional tax) is paid on the property that is "on the balance sheet" of the organization. Basically, these are fixed assets and intangible assets.

The maximum rate is set by the Tax Code of the Russian Federation (Chapter 30) and amounts to 2.2% of the tax base - the average annual value of the property.

Conclusion

The results of studies to assess the competitive potential of shoe enterprises in the regions of the Southern Federal District and the North Caucasus Federal District with the participation of parents, children, buyers and manufacturers are presented in Tables 11-15. Their analysis confirmed the importance of marketing services in the formation of sustainable demand for domestic products within the framework of their import substitution. And the more often these services interact with producers and consumers, the more effective the results of these enterprises will be in ensuring a stable demand for their products, obtaining stable technical and economic indicators of their activities, shaping the image and social security of the population of small and medium-sized cities as city-forming enterprises, in the success of which both producers, and regional

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and municipal branches of government are interested.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 11 Volume: 103

Published: 13.11.2021 <http://T-Science.org>

QR – Issue



QR – Article



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THE ROLE AND IMPORTANCE OF THE UN SUSTAINABLE DEVELOPMENT GOALS IN THE IMPLEMENTATION OF CONTROL OVER THE STATE BUDGET OF NATIONAL PARLIAMENTS

Abstract: This article analyzes the international legal framework of parliamentary control over the state budget, the participation of national parliaments in the implementation of the UN Sustainable Development Goals.

Universal standards have been considered in terms of the implementation of effective parliamentary control over the state budget. In the conditions of the pandemic of COVID-19, scientific and theoretical views on increasing the role of parliaments in the control of the state budget have been presented.

Key words: "parliamentary diplomacy", state budget, parliamentary control, Inter-parliamentary institutions, SDGs Sustainable development goals indicators, Political Forum, Global sustainable policy rating, digital revolution.

Language: English

Citation: Yusupov, S. B. (2021). The role and importance of the UN Sustainable Development Goals in the implementation of control over the state budget of national parliaments. *ISJ Theoretical & Applied Science*, 11 (103), 488-491.

Soi: <http://s-o-i.org/1.1/TAS-11-103-50> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.11.103.50>

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Introduction

The national budget system of each state reflects its political position and the factors of their implementation. Today, the international community is experiencing new trends in increasing the role of parliaments in budgetary control against the background of new Real problems, especially in the conditions of the pandemic of COVID-19.

Control over the state budget is one of the most important functions in the implementation of parliamentary control. The standards and principles of international law are also important in the effective management of the country, socio-economic development, ensuring the human rights and freedoms of the state and its officials, fulfillment of obligations to citizens, as well as the fulfillment of international obligations.

At the same time, ensuring cooperation between the Oliy Majlis of the Republic of Uzbekistan and international organizations, inter-parliamentary

institutions, implementation of advanced international trends in budget control in national legislation are among the topical issues. The international cooperation of the international parliament, which is considered the main factor in the development of the Institute of parliamentary diplomacy, is important to achieve this goal.

Additionally, the implementation of the concept of "Noble governance", an important indicator indicating the process of democratic changes, modernization of the political system, as well as 17 Sustainable Development Goals that should be achieved by the UN until 2030 and the fulfillment of 169 tasks, requires parliaments to play a more active role in the budgetary process.

From international legal norms it is known that as supreme representative institutions, the Institute of Parliament and its members are obliged not only to meet the needs of voters, but also to ensure the rational

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use and proper accounting of public funds by the executive branch.

The Main Findings and Results

In this regard, the President of the Republic of Uzbekistan Sh. Mirziyoyev's speech at the 75th anniversary summit of the United Nations was accompanied by proposals to adopt a special resolution of the General Assembly of the United Nations on the achievement of Sustainable Development Goals and enhancing the role of parliaments in ensuring human rights, as well as to develop the International Code of voluntary obligations of states during pandemics[1].

The international legal framework for parliamentary control over the state budget is so complex that they are not uniform in nature. Subjects of international law (international and specialized organizations) have a targeted influence on the behavior of other entities, in particular the State Institution.

Such influence is carried out through the creativity of the law and the application of law, centralized and decentralized Regulation, Coordination and subordination of interests of the parties, strict and soft methods of regulation. These norms, like other norms, can be in the character of prohibition, loading obligation or authorisation.

The subjects of international legal relations related to parliamentary control over the state budget can be listed as follows:

I. International organizations of general competence. These organizations combine the qualities of parliamentary control over the state budget, based on general international law and the goals and objectives of the international organization. They act as coordinators of international cooperation for the targeted spending of the state budget. In this regard, the United Nations and its specialized agencies play an important role.

II. International organizations with special competence. We know that the activities of international organizations with general competence are not sufficient to create an international legal framework for the field we are studying. To establish international legal norms, such as methodological guidelines for parliamentary control over budgetary control, model laws, international standards and printouts, a narrow range of specialists' knowledge and skills are required. Members of these organizations can be states, parliaments, state organizations responsible for budgetary control.

International organizations with special competence can also be classified as follows:

1. Inter-Parliamentary Union;
2. International organizations of financial control bodies;
3. Inter-Parliamentary Unions of Regional Organizations.

4. States.

The state institution, as a subject of international law, also seeks to ensure economic security through an effective system of budgetary control in the form of a supreme representative body.

The UN has become one of the most pressing strategic goals of the international community in terms of the scale and importance of the Sustainable Development Goals. On the official website of the United Nations, the Institute for Sustainable Development Goals described as follows: "The Sustainable Development Goals (SDGs in subsequent places) are a call to action by poor, rich and middle-income countries to improve their well-being and protect our planet.

States recognize measures to eliminate poverty in proportion with efforts to ensure economic growth, solve a number of issues in the field of education, health, social protection and employment, as well as fight against climate change and Environmental Protection" [2].

The United Nations and the parliament recommend to establish closer cooperation with parliaments at the national level, including to expand parliamentary capacity, in particular, to allocate budget funds for the implementation of the agenda in the field of sustainable development until 2030, strengthen the rule of law and promote the harmonization of national legislation with international obligations [3].

In order to achieve the goals and priorities set out in this policy document, the highest representative bodies of each participating state must establish effective budget control and create a transparent accountability system in this regard, providing a voluntary national review of the Republic of Uzbekistan, integrating these goals and objectives into the rule-making process.

In the development of the state budget project, the consideration of the National SDGs will be aimed at ensuring the stability of the budget and optimizing costs taking into account its priorities.

The role of the UN Sustainable Development Goals in the control of countries' budgets has been studied by a number of scientists such as Hege E., Brimont L., Pagnon F.[4], Kumar S., Kumar N., Vivekadhish S. [5], Cabannes Y [6], V.Belobragin, T.Salimova, L.Biryukova [7], T. A. Lanshina [8],

On May 22, 2018, the UN General Assembly adopted United Nations Resolution 72/278 on Cooperation between National Parliaments and the Inter-Parliamentary Union [9]. With this document, the General Assembly recognized the role of national parliaments in the implementation of national plans and strategies, as well as ensuring transparency and accountability on a national and global scale. The resolution recommended the United Nations and the the Inter-Parliamentary to continue close cooperation in various areas, such as sustainable development for

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the Union, human rights, gender equality and empowerment of women, democracy and "Noble governance", the development of information and communication technologies and reducing the risk of natural disasters [10].

Scientists from the UN SDGs study Hege E., Brimont L., Pagnon F. believes that the impact of the SDGs indicators on control over the state budget distinguishes three features.

First, these indicators are used as a management tool. Based on this view, O.R. Yang points out that the key factor in leading collective action is the allocation of resources, including national budgets, by setting medium- and long-term priorities for governance as defined in the SDGs [11].

Secondly, the SDGs serves to increase the accountability of the state governing bodies. Historically, indicators and assessments play an important role in democratic debate. An assessment based on accurate statistical indicators can motivate governments and officials to take their actions responsibly and transparently.

Thirdly, the SDGs can help bring national budgets closer and standardized to each other, which in turn contributes to the global sustainable policy rating. It created the opportunity for the member states to analyze the budget in accordance with the SDGs in the course reports submitted to the High-Level Political Forum on Sustainable Development [12].

In our opinion, SDGs indicators on the first factor can be a means of mass action. Clearly, this raises the question of whether public authorities are able to identify and address budget needs that are appropriate to specific goals or projects aimed at achieving SDGs indicators. In particular, to what extent does it fit into the SDGs classification in education?

On the second factor, states are required to establish links between national budgets and SDGs performance system, to show the country's progress in achieving SDGs and to help assess government performance.

The third factor is the exchange of views between the parliaments of countries who reported to the high-level political forum on sustainable development, as well as the exchange of views between politicians and experts, the organization of

collective intellectual debates on national budget spending is important in the transition to Global Sustainable Development.

In addition, democratic institutions, civil society institutions can participate in this process on the basis of public control.

H. Schmidt, L. Gostin, E. Emanuel, a team of scientists who have studied the reflection of BRM indicators in the national budget, put forward the theory that a "digital revolution" is required for sustainable development on a global scale. Transformation in each area determines the problems of priority investment and regulation, which the government working with business and civil society requires the implementation of clearly defined functions [13].

With the support of J.Wu, the idea states that research and development aimed at SDGs will require cooperation between researchers in various disciplines, as well as extensive contacts and cooperation with industry, government and organizations, which in turn helps to create a new research [14].

Conclusion

In our opinion, based on the doctrinal views of the above-mentioned scholars, it is vital to establish platforms for communication with the international and national scientific communities in the implementation of the powers of the parliament on the budget. Today, information and communication research, in particular the solution of technological problems such as storage capacity, computing speed, communication and network development, is considered a key factor in overcoming socio-economic problems in most developing countries.

Additionally, it is expedient to develop a special strategic program for cooperation of international non-governmental organizations, in addition to international organizations, inter-parliamentary institutions, international organizations of financial control bodies, with general competence in the implementation of parliamentary control over the budget. This is because the ratings and indicators maintained by these organizations also have a direct impact on the UN SDGs.

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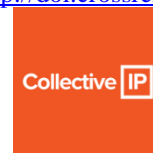
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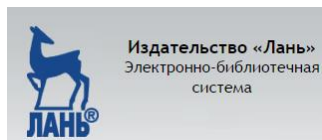
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Signed in print: 30.11.2021. Size 60x84 $\frac{1}{8}$

«Theoretical & Applied Science» (USA, Sweden, KZ)
Scientific publication, p.sh. 76.125. Edition of 90 copies.
<http://T-Science.org> E-mail: T-Science@mail.ru

Printed «Theoretical & Applied Science»