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Issue Article

Denis Chemezov
Vladimir Industrial College
M.Sc.Eng., Corresponding Member of International Academy of Theoretical and Applied Sciences, Lecturer, Russian Federation
https://orcid.org/0000-0002-2747-552X
vic-science@yandex.ru

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Vladimir Industrial College
Student, Russian Federation

Andrey Karasyov
Vladimir Industrial College
Student, Russian Federation

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Vladimir Industrial College
Student, Russian Federation

Vladislav Zaychukhin
Vladimir Industrial College
Student, Russian Federation

REFERENCE DATA OF PRESSURE DISTRIBUTION ON THE SURFACES OF AIRFOILS HAVING THE NAMES BEGINNING WITH THE LETTER L

Abstract: *The results of the computer calculation of air flow around the airfoils having the names beginning with the letter L are presented in the article. The contours of pressure distribution on the surfaces of the airfoils at the angles of attack of 0, 15 and -15 degrees in conditions of the subsonic airplane flight speed were obtained.*

Key words: *the airfoil, the angle of attack, pressure, the surface.*
Language: *English*
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Introduction

Creating reference materials that determine the most accurate pressure distribution on the airfoils surfaces is an actual task of the airplane aerodynamics.

Materials and methods

The study of air flow around the airfoils was carried out in a two-dimensional formulation by means of the computer calculation in the *Comsol Multiphysics* program. The airfoils in the cross section were taken as objects of research [1-27]. In this work, the airfoils having the names beginning with the letter *L* were adopted. Air flow around the airfoils was carried out at the angles of attack (α) of 0, 15 and -15 degrees. Flight speed of the airplane in each case was subsonic. The airplane flight in the atmosphere was carried out under normal weather conditions. The geometric characteristics of the studied airfoils are

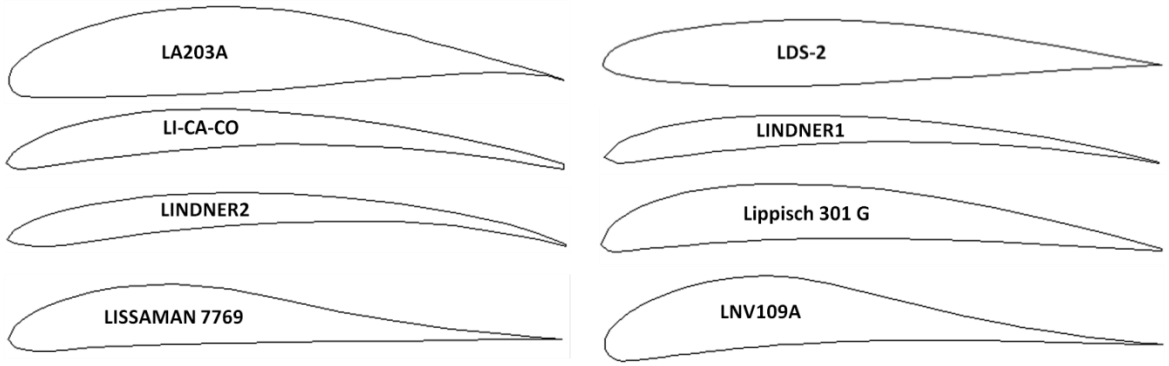
presented in the Table 1. The geometric shapes of the airfoils in the cross section are presented in the Table 2.

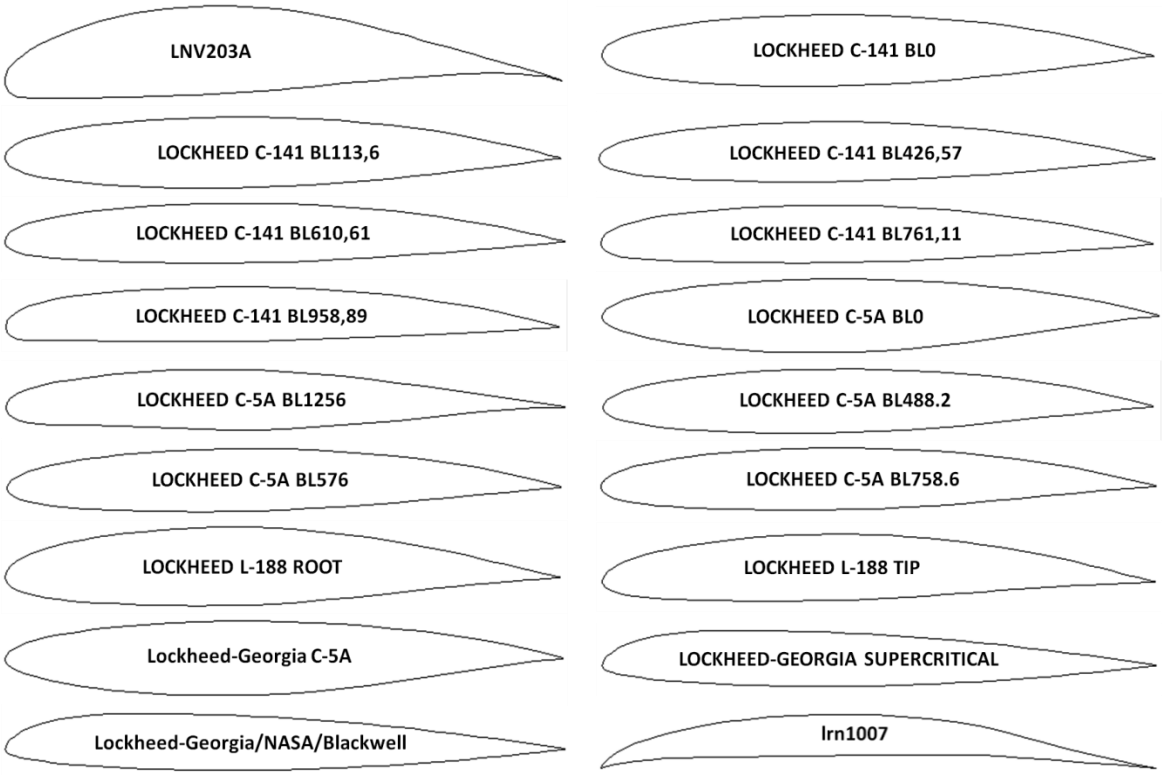
Table 1. The geometric characteristics of the airfoils.

Airfoil name	Max. thickness	Max. camber	Leading edge radius	Trailing edge thickness
LA203A	15.73% at 34.3% of the chord	5.48% at 46.0% of the chord	3.0242%	0.0%
LDS-2	11.97% at 34.9% of the chord	2.16% at 45.0% of the chord	1.0915%	0.0%
LI-CA-CO	7.3% at 25.0% of the chord	7.3% at 40.0% of the chord	0.8042%	0.9%
LINDNER1	5.92% at 20.0% of the chord	6.16% at 40.0% of the chord	1.4329%	0.25%
LINDNER2	6.65% at 20.0% of the chord	6.88% at 50.0% of the chord	0.7091%	0.4%
Lippisch 301 G	9.8% at 25.0% of the chord	10.05% at 30.0% of the chord	1.4012%	0.3%
LISSAMAN 7769	10.98% at 30.0% of the chord	4.43% at 30.0% of the chord	1.4998%	0.0%
LNV109A	12.99% at 23.5% of the chord	5.97% at 31.5% of the chord	3.4968%	0.0%
LNV203A	15.73% at 34.3% of the chord	5.48% at 46.0% of the chord	3.0235%	0.0%
LOCKHEED C-141 BL0	12.99% at 40.2% of the chord	1.09% at 64.5% of the chord	1.6191%	0.1096%
LOCKHEED C-141 BL113,6	12.64% at 40.2% of the chord	1.12% at 64.5% of the chord	1.5382%	0.1234%
LOCKHEED C-141 BL426,57	10.99% at 40.2% of the chord	1.32% at 50.0% of the chord	1.1663%	0.1854%
LOCKHEED C-141 BL610,61	10.77% at 40.2% of the chord	1.54% at 50.0% of the chord	1.5044%	0.2188%
LOCKHEED C-141 BL761,11	10.51% at 40.2% of the chord	1.8% at 50.0% of the chord	1.6226%	0.2546%
LOCKHEED C-141 BL958,89	10.0% at 40.2% of the chord	2.32% at 45.1% of the chord	2.1456%	0.3249%
LOCKHEED C-5A BL0	13.12% at 40.0% of the chord	0.73% at 85.0% of the chord	1.0842%	0.2578%
LOCKHEED C-5A BL1256	10.78% at 40.0% of the chord	1.43% at 30.0% of the chord	1.5955%	0.2013%
LOCKHEED C-5A BL488.2	11.55% at 40.0% of the chord	1.22% at 70.0% of the chord	1.0667%	0.22%
LOCKHEED C-5A BL576	11.1% at 40.0% of the chord	1.4% at 65.0% of the chord	1.0637%	0.219%
LOCKHEED C-5A BL758.6	11.05% at 40.0% of the chord	1.35% at 60.0% of the chord	1.1819%	0.222%
LOCKHEED L-188 ROOT	13.99% at 41.3% of the chord	2.0% at 51.7% of the chord	1.9032%	0.28%
LOCKHEED L-188 TIP	11.99% at 41.3% of the chord	2.66% at 51.7% of the chord	1.4116%	0.24%
Lockheed-Georgia C-5A	13.12% at 40.0% of the chord	0.73% at 85.0% of the chord	1.083%	0.258%
LOCKHEED-GEORGIA SUPERCRITICAL	10.0% at 32.0% of the chord	1.46% at 16.0% of the chord	0.9893%	0.3%
Lockheed-Georgia/NASA/Blackwell	10.0% at 32.0% of the chord	1.46% at 16.0% of the chord	0.9893%	0.3%
lrn1007	7.27% at 39.8% of the chord	5.9% at 44.6% of the chord	0.216%	0.0%

Note:
LA203A (Douglas/Liebeck LA203A high lift airfoil);
Lippisch 301 G (A. Lippisch (Germany));
LISSAMAN 7769 (Lissaman 7769 human powered aircraft airfoil);
LNV109A (Douglas/Liebeck LNV109A high lift airfoil);
LOCKHEED L-188 ROOT (Lockheed L-188/P-3 root airfoil NACA 0014 -1.10 40/1.051 Cli=.3 a=.8);
LOCKHEED L-188 TIP (Lockheed L-188/P-3 tip airfoil NACA 0012 -1.10 40/1.051 Cli=.4 a=.8);
Lockheed-Georgia C-5A (Transonic wing airfoil);
LOCKHEED-GEORGIA SUPERCRITICAL (Lockheed-Georgia/NASA/Blackwell rotorcraft airfoil);
Lockheed-Georgia/NASA/Blackwell (Rotorcraft airfoil);
lrn1007 (RN(1)-1007 low Reynolds number airfoil).

Table 2. The geometric shapes of the airfoils in the cross section.





Results and discussion

The calculated pressure contours on the surfaces of the airfoils at the different angles of attack are presented in the Figs. 1-26. The calculated values on the scale can be represented as the basic values when comparing the pressure drop under conditions of changing the angle of attack of the airfoils.

26 airfoils of the LOCKHEED, LNV, LINDNER, etc. series were considered. All airfoils had camber of the various value. Thus, all airfoils were asymmetrical.

The drag was determined from the calculated pressure contours on the leading edge of the airfoils. The lower the calculated pressure on the edge, the better the aerodynamic characteristics of the airplane wing. Positive pressure occurs on the leading edge during horizontal flight. The change in the pressure values varies within 0.17 kPa. The slight change in pressure does not give an idea of the more favorable airfoil configuration. Therefore, the lift to drag ratio of the airplane wing can be determined from the pressure distribution area. However, the minimum pressure value (6.42 kPa), and hence the drag coefficient, was determined for the LOCKHEED C-141 BL958,89 airfoil, and the maximum pressure value (6.59 kPa) was determined for the LINDNER2 airfoil.

With an increase in the contact area of the airfoils with air flows, positive pressure increases and negative pressure arises on the leading edge and on the upper and lower surfaces. This happens under conditions of the airplane maneuvers. The maneuvers are climb and descent of the airplane. In this case, the maximum value of negative pressure was determined on the leading edge of the airfoil. The maximum and minimum values were identified after analyzing the calculated pressures values on the leading edge. Pressure of -68.1 kPa acts on the LINDNER2 airfoil at the positive angle of attack, and pressure of -67.6 kPa acts on the LDS-2 airfoil at the negative angle of attack, which is the highest value of pressures of all calculated values. The minimum pressures values of -27.3 kPa and -6.04 kPa were determined for the LNV109A and lrn1007 airfoils at the positive and negative angles of attack, respectively. Thus, the LNV109A and lrn1007 airfoils have the best aerodynamic properties.

Let us consider these airfoils in detail. The values of the maximum camber of both airfoils are the same and are about 6% relative to the chord length. However, under conditions of the airplane climb, the drag decreases with the large radius of the leading edge of the airfoil. This phenomenon is provided by the airfoil with the small radius of the leading edge during the airplane descent.

The LINDNER2 and LDS-2 airfoils (where high pressure occurs) have the opposite geometric parameters compared to the geometric parameters of the LNV109A and lrn1007 airfoils.

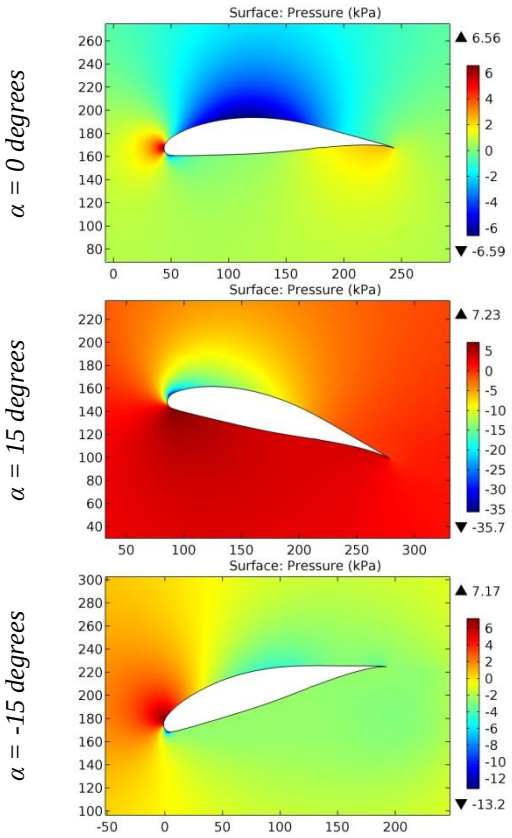


Figure 1. The pressure contours on the surfaces of the LA203A airfoil.

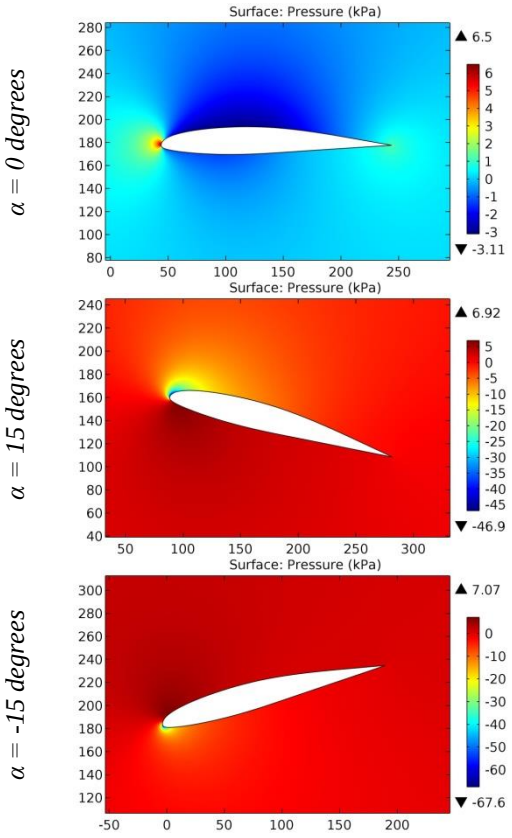


Figure 2. The pressure contours on the surfaces of the LDS-2 airfoil.

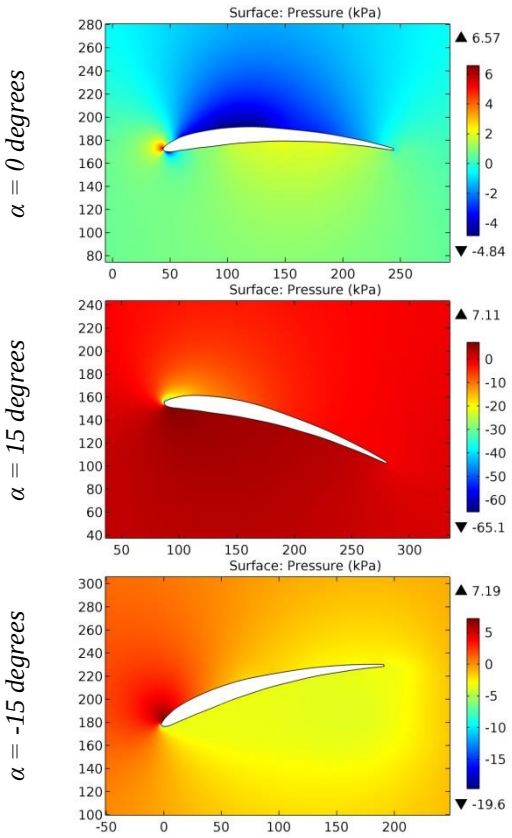


Figure 3. The pressure contours on the surfaces of the LI-CA-CO airfoil.

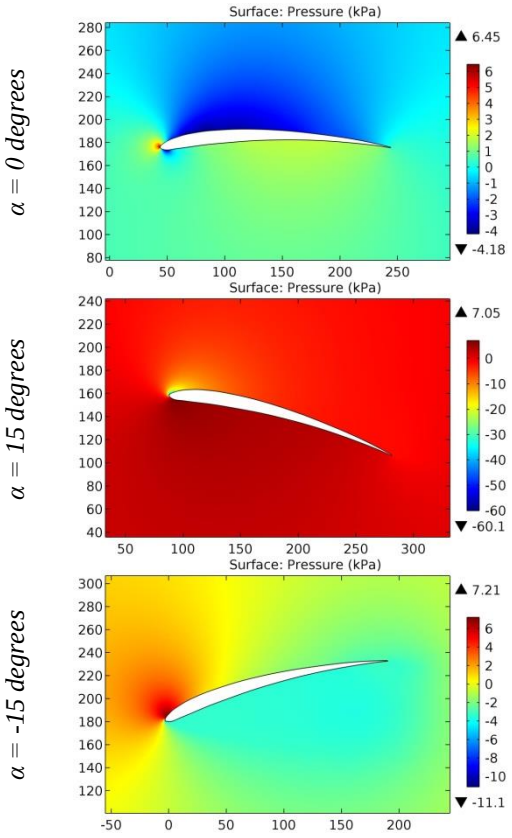


Figure 4. The pressure contours on the surfaces of the LINDNER1 airfoil.

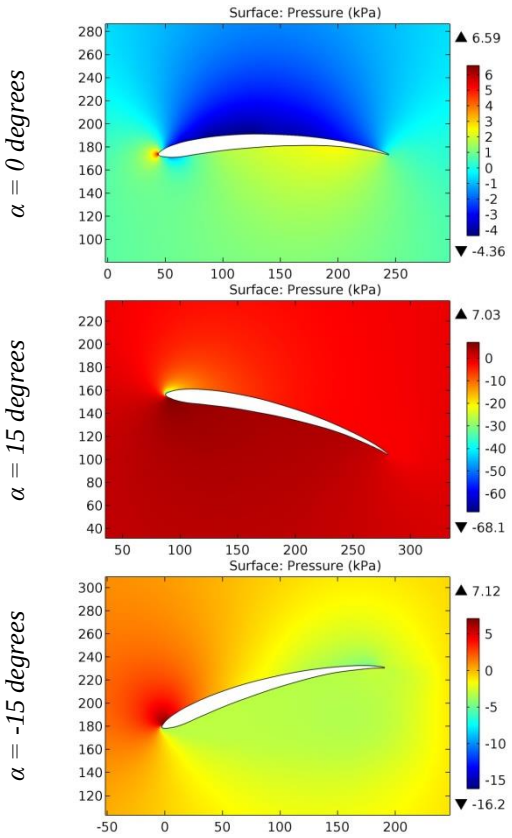


Figure 5. The pressure contours on the surfaces of the LINDNER2 airfoil.

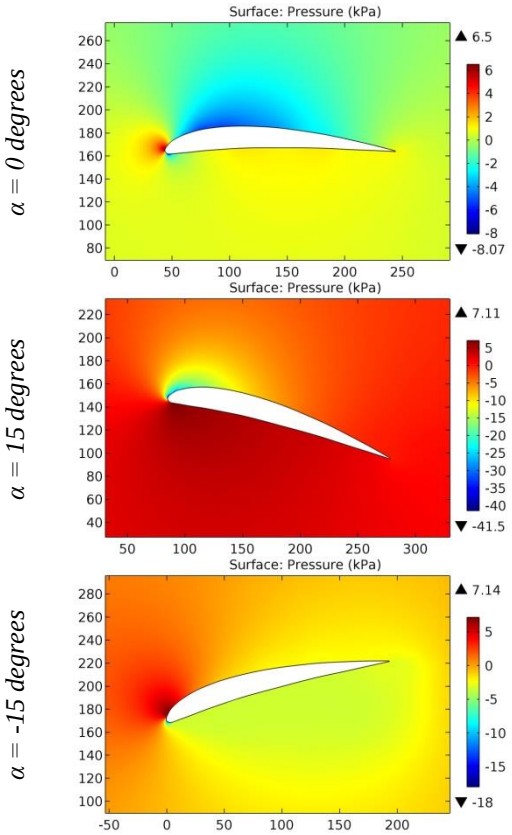


Figure 6. The pressure contours on the surfaces of the Lippisch 301 G airfoil.

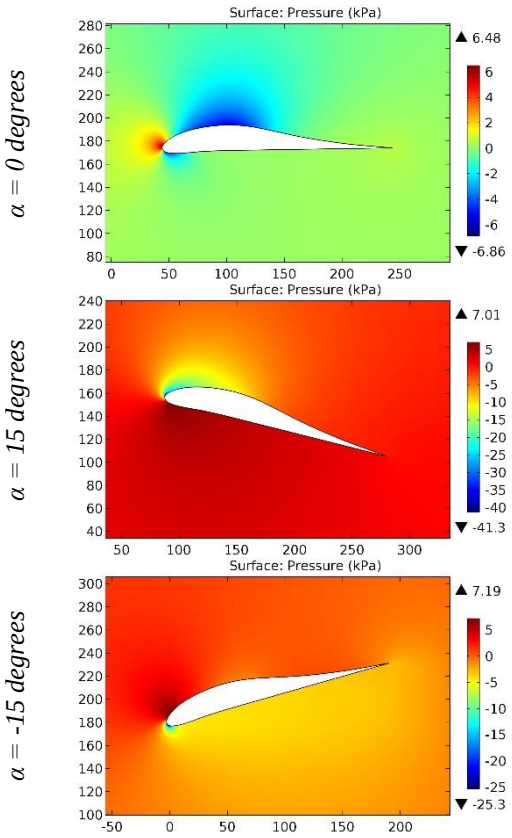


Figure 7. The pressure contours on the surfaces of the LISSAMAN 7769 airfoil.

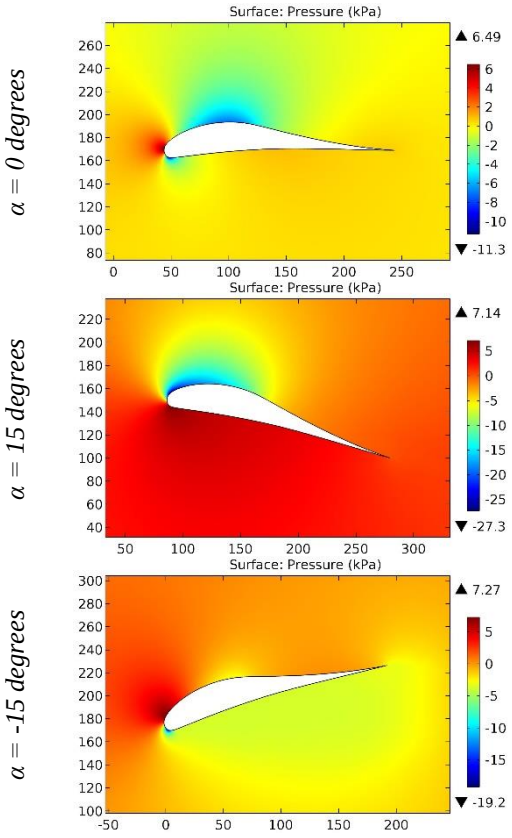


Figure 8. The pressure contours on the surfaces of the LNV109A airfoil.

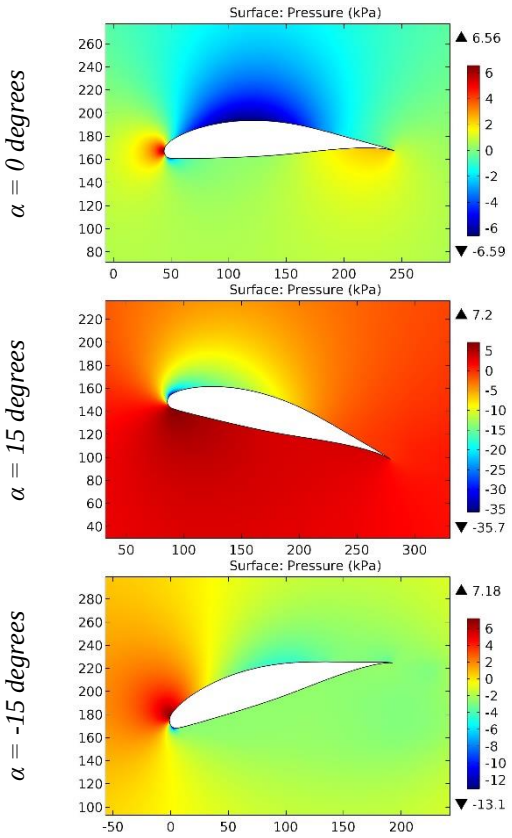


Figure 9. The pressure contours on the surfaces of the LNV203A airfoil.

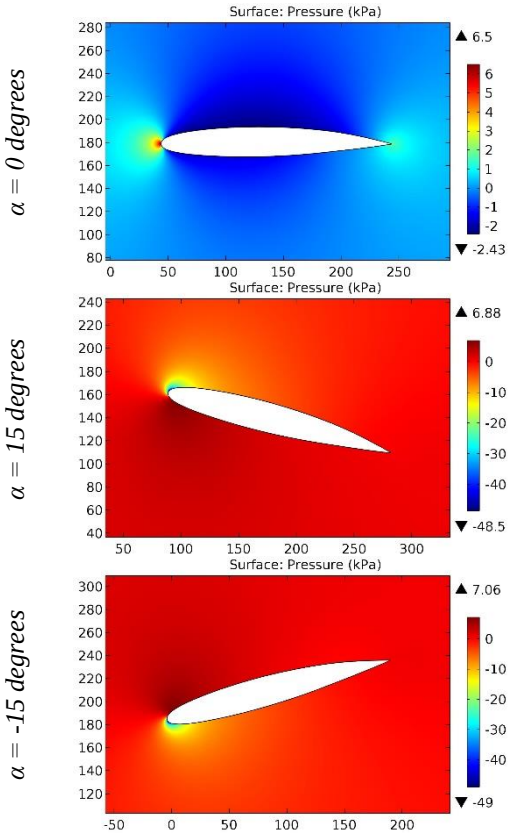


Figure 10. The pressure contours on the surfaces of the LOCKHEED C-141 BL0 airfoil.

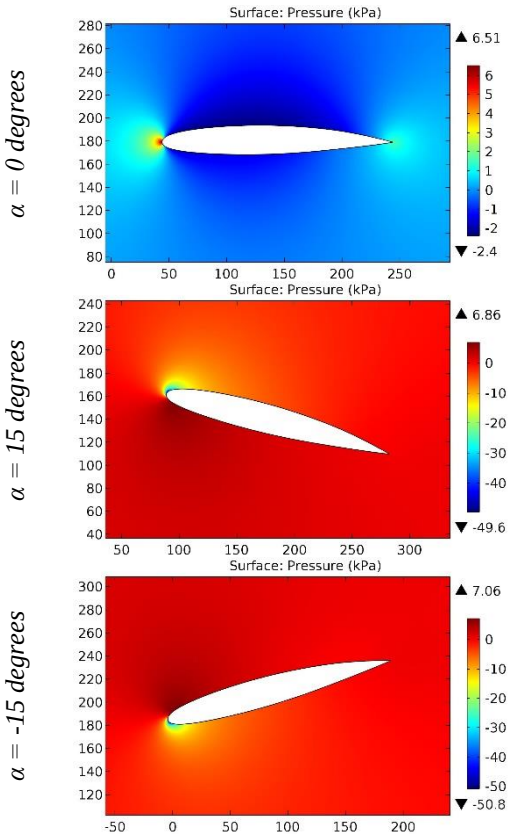


Figure 11. The pressure contours on the surfaces of the LOCKHEED C-141 BL113,6 airfoil.

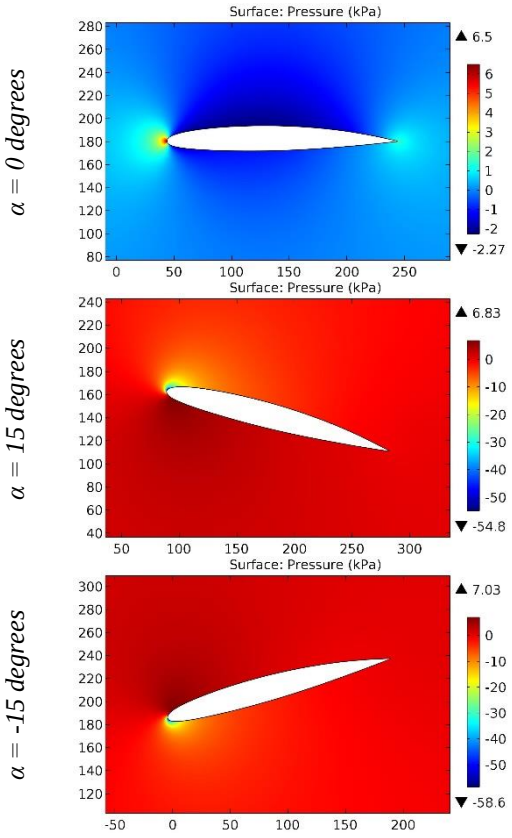


Figure 12. The pressure contours on the surfaces of the LOCKHEED C-141 BL426,57 airfoil.

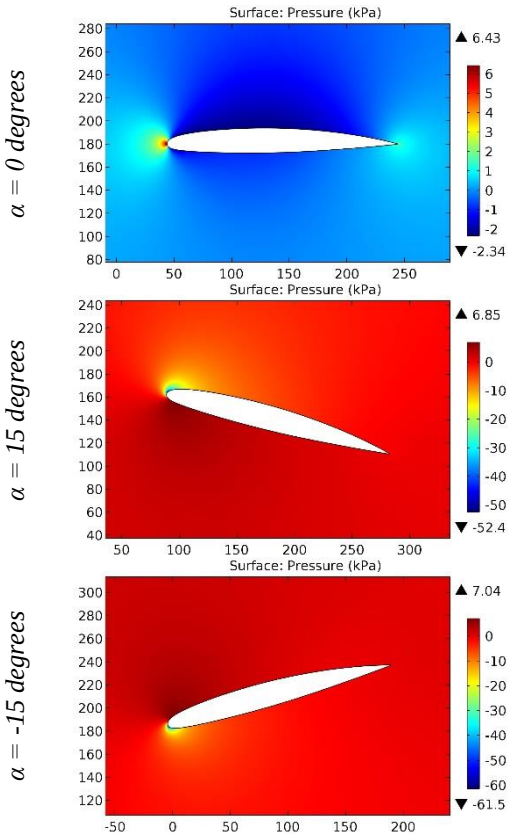


Figure 13. The pressure contours on the surfaces of the LOCKHEED C-141 BL610,61 airfoil.

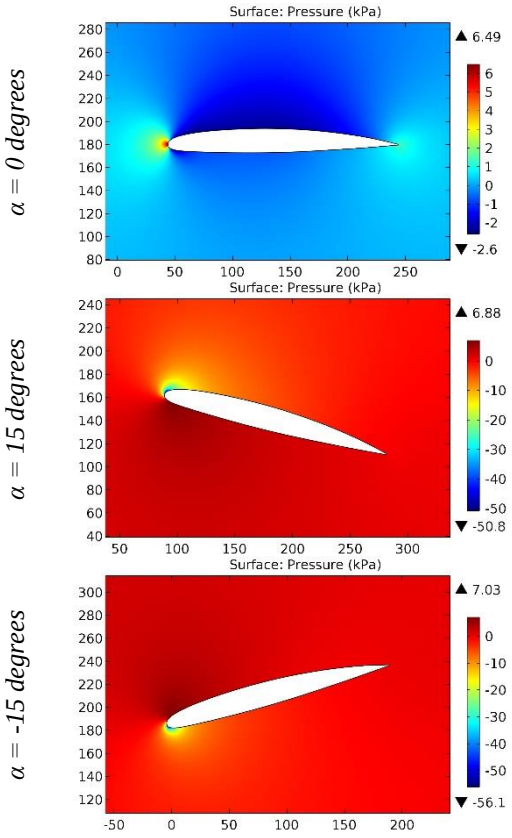


Figure 14. The pressure contours on the surfaces of the LOCKHEED C-141 BL761,11 airfoil.

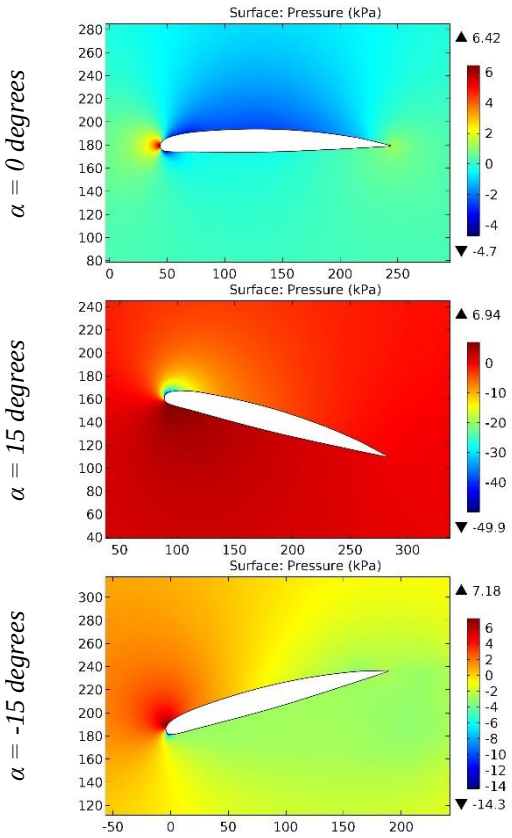


Figure 15. The pressure contours on the surfaces of the LOCKHEED C-141 BL958,89 airfoil.

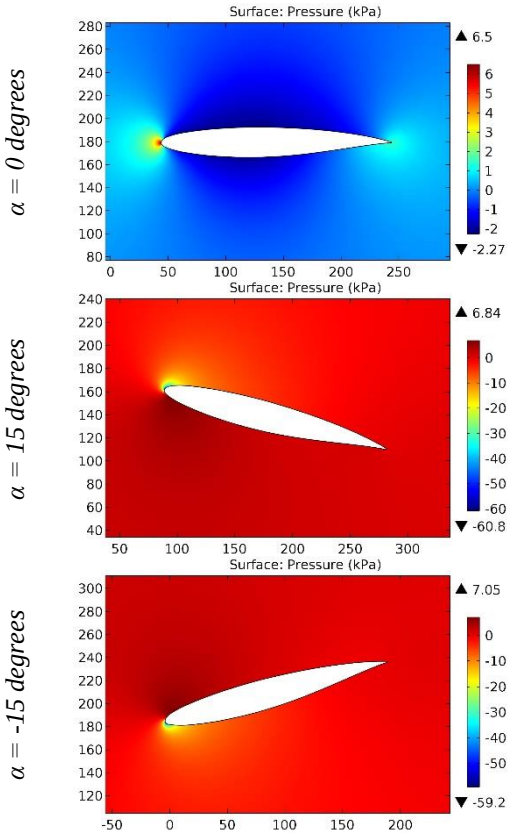


Figure 16. The pressure contours on the surfaces of the LOCKHEED C-5A BL0 airfoil.

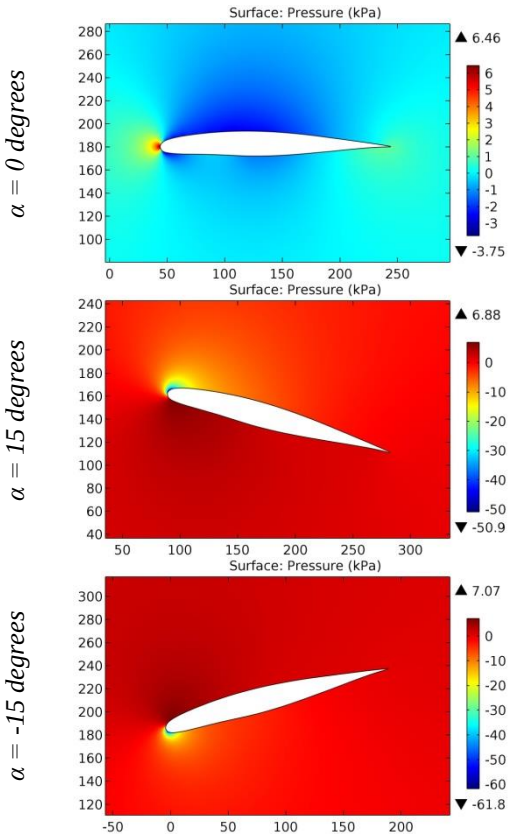


Figure 17. The pressure contours on the surfaces of the LOCKHEED C-5A BL1256 airfoil.

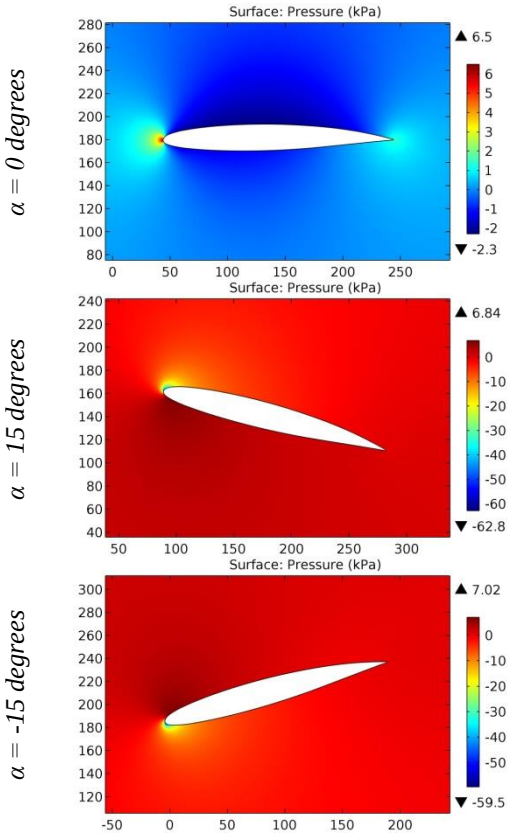


Figure 18. The pressure contours on the surfaces of the LOCKHEED C-5A BL488.2 airfoil.

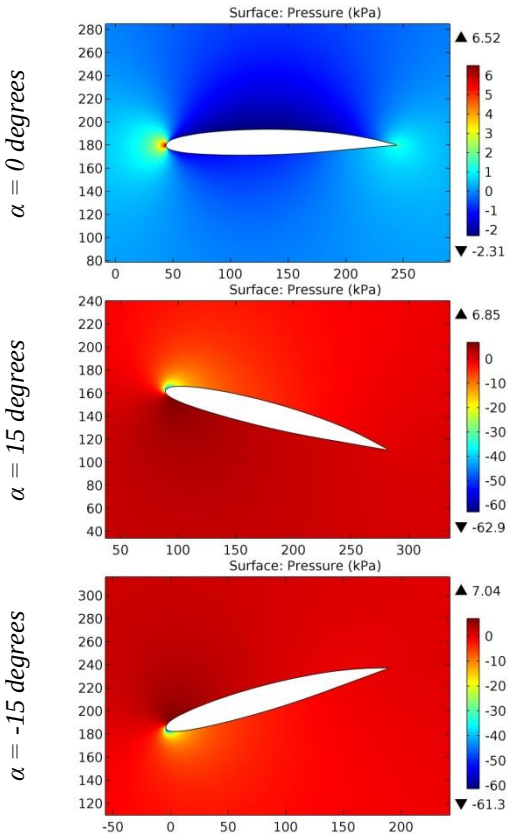


Figure 19. The pressure contours on the surfaces of the LOCKHEED C-5A BL576 airfoil.

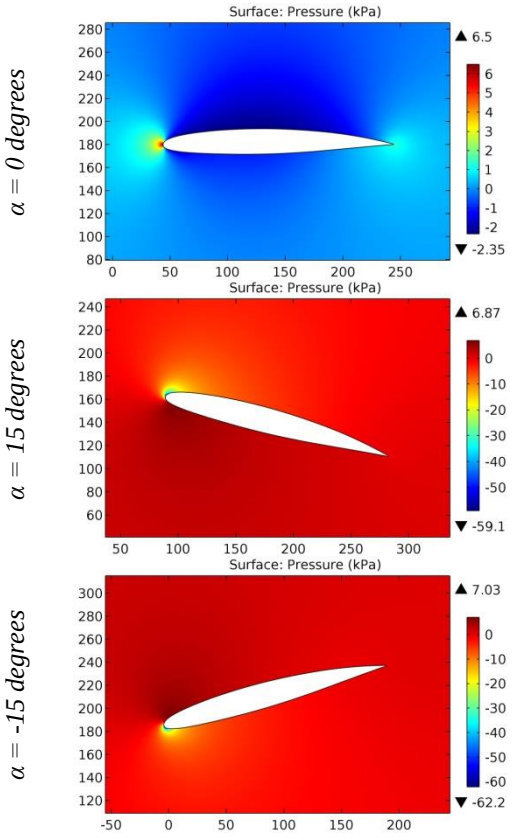


Figure 20. The pressure contours on the surfaces of the LOCKHEED C-5A BL758.6 airfoil.

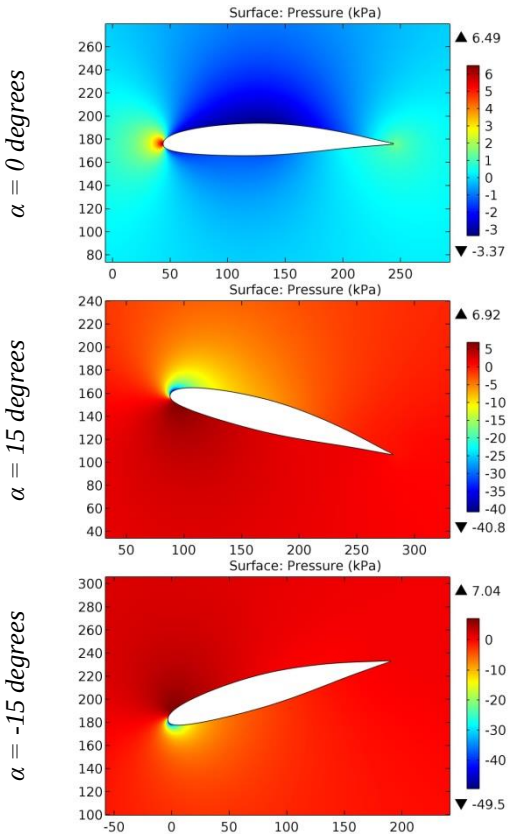


Figure 21. The pressure contours on the surfaces of the LOCKHEED L-188 ROOT airfoil.

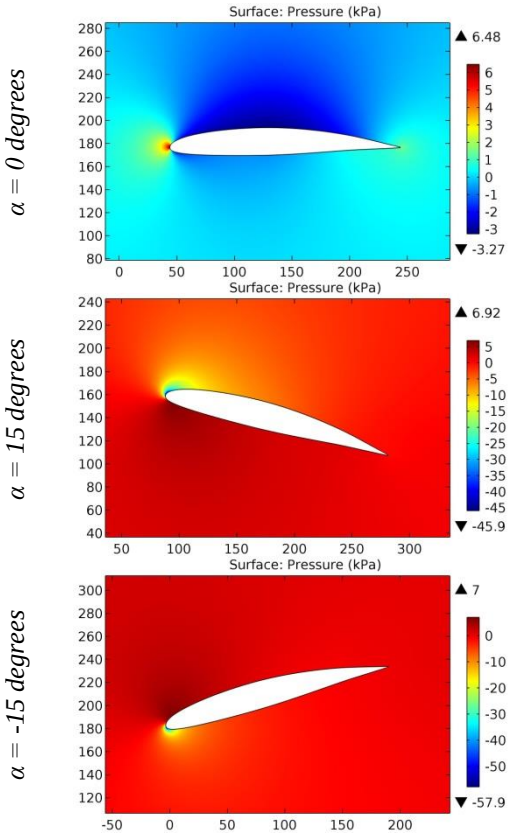


Figure 22. The pressure contours on the surfaces of the LOCKHEED L-188 TIP airfoil.

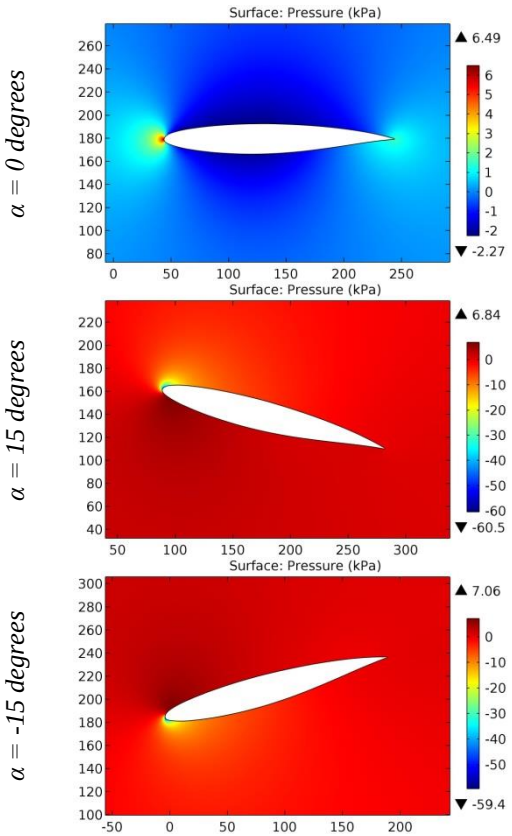


Figure 23. The pressure contours on the surfaces of the Lockheed-Georgia C-5A airfoil.

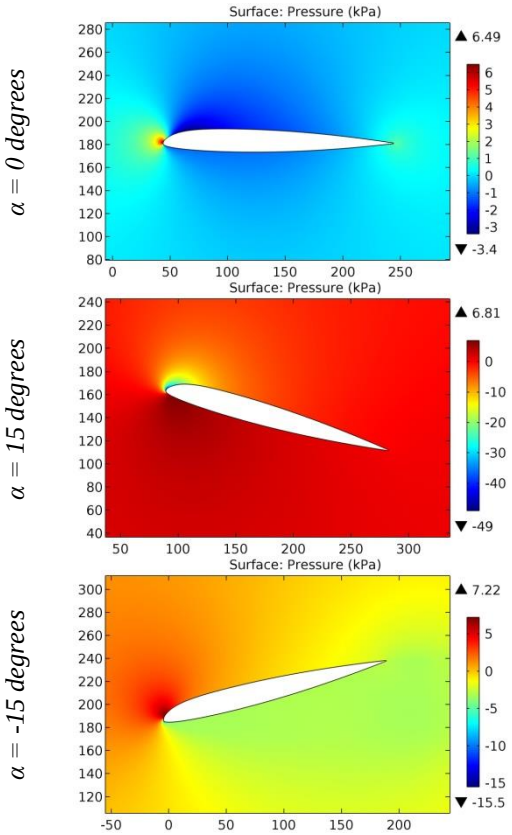


Figure 24. The pressure contours on the surfaces of the LOCKHEED-GEORGIA SUPERCRITICAL airfoil.

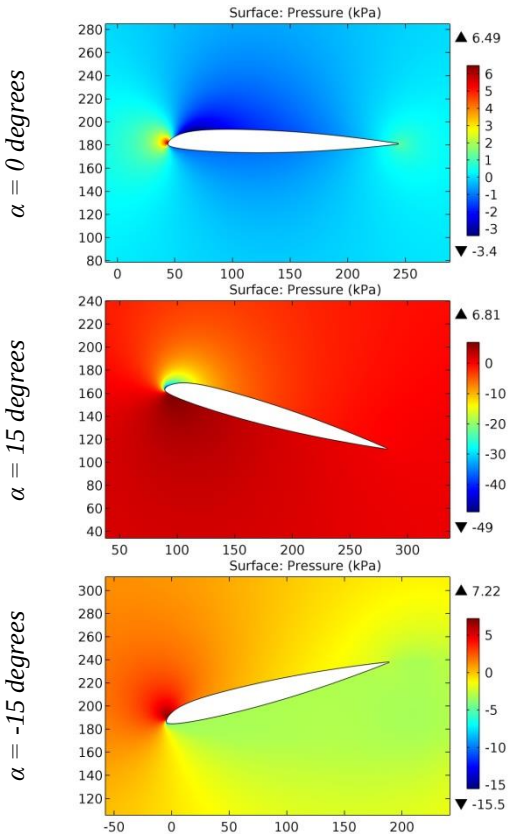


Figure 25. The pressure contours on the surfaces of the Lockheed-Georgia/NASA/Blackwell airfoil.

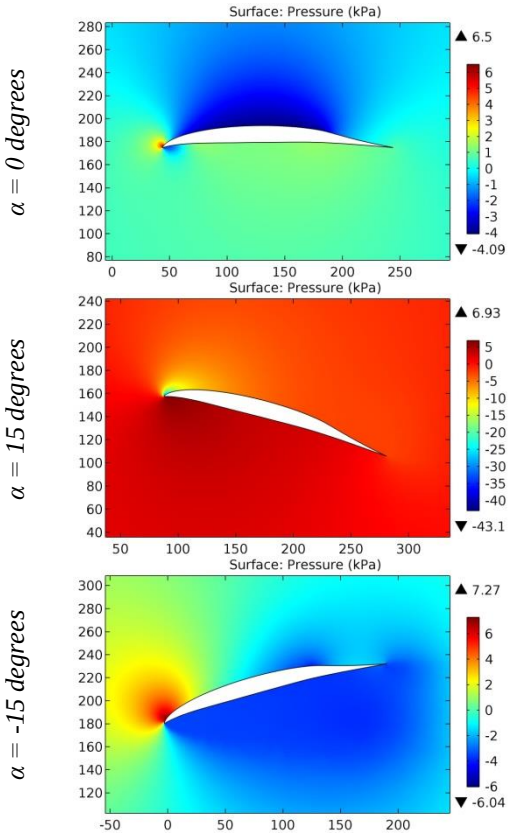


Figure 26. The pressure contours on the surfaces of the lrn1007 airfoil.

Conclusion

The calculation results make it possible to compare the aerodynamic characteristics of the airplanes wings of the various configurations. Since the large drag on the leading edge reduces the aerodynamic characteristics of the airplane wing, the purpose of this study was to determine and analyze the airfoils that are subjected to minimal pressures during horizontal flight and maneuvers of the airplane. According to this indicator, some airfoils were identified (LINDNER2, LDS-2, LNV109A and lrn1007). After comparing these airfoils, it was concluded that the maximum camber of the airfoil during the airplane maneuvers should vary in the range from 3% to 6% relative to the chord length, and the radius of the leading edge during climb and descent of the airplane should be at least 3.5% and 0.2%, respectively. These geometric parameters of the airfoils improve the aerodynamic characteristics of the airplane.

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Issue Article

Seno Andri
University of Riau
Jl. Binawidya Km 12.5, 28291,
Pekanbaru Riau, Indonesia
Faculty of Economics and Business

Ajeung Shierly liandra
University of Riau
Jl. Binawidya Km 12.5, 28291,
Pekanbaru Riau, Indonesia
Faculty of Economics and Business

THE EFFECT OF GIVING COMPENSATION THROUGH EMPLOYEE MORALE AT PT INDOKOMAS BUANA PERKASA IN MAREDAN BARAT

Abstract: *The company always requires employees to improve short- and long-term performance to contribute to achieving company goals. Improving employee performance requires evaluation as a mechanism to provide feedback. Performance evaluation is important because it measures how much an employee can complete his work. Companies must realize that good employee performance is due to some driving factors that companies must boost to motivate their employees.Companies must give serious attention to employees so that employees can maintain their performances. If companies do not pay attention to their employees' basic needs, their performance can certainly decline. Based on the description and explanation of the background, the high level of employee turnover proves that the employee's performance is still low with the formulation of the problem What is the Effect of Giving Compensation to Employee Performance Through Employee Morale at PT Indokomas Buana Perkasa in Maredan Barat.*

Based on the theoretical studies and the formulation of the problems discussed above, the following conclusions are drawn: The descriptive analysis of the research that has been done shows that the provision of compensation, employee performance, and employee morale at PT Indokomas Buana Perkasa in Maredan Barat is in the category of strongly agree and agree.In the compensation variable, the highest dimension is the provision of incentives, while the lowest is the provision of facilities. In the variable of employee morale, the highest dimension is cooperation, while the lowest dimension is the dimension of work discipline. Then for the employee performance variable, the highest dimension is the presence and ability to cooperate, while the lowest is the quantity dimension of the results.

Key words: *trust, compensation, company.*

Language: *English*

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Scopus ASCC: *2000.*

Introduction

Competition in the current globalization era makes business between companies increasingly tight. Companies must face all challenges to compete with similar companies in the current era.Business is carried out continuously, from raw materials procurement, production, marketing, and distribution to consumers in the form of goods and services aiming to benefit from these goods and services. In the business world, ethics is needed in organizations because business is an activity that requires moral responsibility in its implementation. After all, it involves many people in it. A successful and superior company or organization is a company or

organization that has good performance and appropriate managerial arrangements, good finances, excellence in technology, good and complete facilities, and infrastructure.

Indonesia is one of the developing countries where the government carries out many developments. Significant development occurs in the construction sector. Working in construction sector projects is an important part of a country's development, where construction projects for the construction of buildings, roads, bridges, and other infrastructure are a measure of the country's economic development. Construction project success has traditionally been measured in time, cost, and quality. Success is influenced by important factors (Critical Success Factors). One of them is human resources. Human resources are the driving force for a company or organization to support the success of the implemented project. The potential in human resources owned by the organization must be optimized as well as possible to show good performance and provide optimal output. PT Indokomas Buana Perkasa has a large number of workers. The number of workers has been divided into several work items such as the field, warehouse, and site. PT Indokomas Buana Perkasa in Perawang itself is located on Alamsyah street, Maredan Barat Village, Tualang District, Siak Regency, Riau Province. Source: PT Indokomas Buana Perkasa.

In addition, other phenomena related to work spirit can be seen from Turn Over data at PT Indokomas Buana Perkasa in the last five years, from 2017 to 2021. The number of turnovers development at PT Indokomas Buana Perkasa from 2017 to 2021 experienced fluctuating numbers. It shows that the highest percentage was in 2019, an 11.05% increase. On the other hand, the lowest occurred in 2020 with a percentage of 7%. Daromes (2006) argues that before turnover occurs, the behavior that precedes it is the turnover intention that best predicts the turnover. The phenomenon related to the number of turnovers is where the entry and exit of employees are caused by discomfort or displeasure at work. Therefore, they intend to look for other workplaces. They hope that the new workplace will be more suitable for seeking comfort while working. Nitisemito (2010) said that labor turnover is the level of employees going in and out. Declining employees is an indication of increased work morale. However, based on data on the turnover rate at PT Indokomas Buana Perkasa, the numbers are still changing due to the low employee morale at PT Indokomas Buana Perkasa.

Based on the description and explanation of the background, the high level of employee turnover proves that the employee's performance is still low with the formulation of the problem What is the Effect of Giving Compensation to Employee Performance Through Employee Morale at PT Indokomas Buana Perkasa in Maredan Barat

Theoretical Framework

Human Resource Management

Human resources are an individual's thinking power and physical power. Their behavior and characteristics are determined by heredity and environment, while work performance is motivated by the desire to fulfill their satisfaction (Widodo, 2015).

The resources needed to run the organization cannot be seen as an independent but a formidable unit to form a synergy (Sutrisno, 2009).

According to Hasibuan (2014), Management is the science of managing the process of utilizing human resources and other sources effectively and efficiently to achieve a certain goal.

According to Mathis & Jackson (2012) in Widodo (2015), Human resource management (HRM) can be defined as the science and art of regulating the relationship and role of the workforce to be effective and efficient in using human abilities to achieve goals in every company.

From the various sources of understanding of human resources, it can be concluded that human resources are the driving force for organizations that will run the organization with the ability to think and physical power to achieve the goals of the organization. Human resource management is an activity that regulates human resources within an organization so that they can work to the provisions or directions of the organization.

Employees' Morale

Description of Morale

Morale is often associated with the attitude or behavior of employees toward the work they do by paying attention to and observing the attitudes and behavior of employees towards their work. It can be seen to what extent these employees have worked productively, and employees can achieve high productivity with high morale. Therefore, every company will always try to maintain employee morale so that work productivity remains high and even increases. Thus, the company's goals that have been set can be achieved.

Hypotheses

According to Sugiyono (2013), a hypothesis is a quick answer to a problem research, that is stated in the form of a question. The hypothesis, which is the answer to the problem, is formulated as follows:

H1 Compensation (X) partially affects employee performance (Y) at PT. Indokomas Buana Perkasa in Maredan Barat.

H2 Compensation (X) partially affects employee morale (Z) at PT. Indokomas Buana Perkasa in Maredan Barat.

H3 Morale (Z) has a partial effect on employee performance (Y) at PT. Indokomas Buana Perkasa in

Maredan Barat.

H4 Compensation (X) has a simultaneous effect on employee performance (Y) through employee morale (Z) at PT. Indokomas Buana Perkasa in Maredan Barat.

Operational Concepts and Measurement Techniques

Operational Concept

Operational is a form of operationalization definition of the research concepts that will be measured. Abstract concepts in this study are then operationalized so they can be measured and differentiated between high and low. These concepts have dimensions which are then generated into variables that will be measured with indicators. After that, they are translated into statements in the questionnaire.

Measurement Technique

The Likert scale measures attitudes, opinions, and perceptions of a person or group of people about social phenomena.

Research Method

Research Site

This study was conducted at PT. Indokomas Buana Perkasa in Perawang on Jalan Alamsyah, Maredan Barat Village, Tualang District, Siak Regency, Riau Province.

Population and Sample

Sugiyono (2006) says that the population is a generalization area consisting of objects or subjects with certain qualities and characteristics set by researchers to be studied and then drawn conclusions. The population in this study amounted to 115 employees at PT. Indokomas Buana Perkasa.

Type and Source of Data

The data used in this study is the primary data obtained through distributing a list of questions (questionnaires) given to PT. Indokomas Buana Perkasa's employees who became respondents. Secondary data is data obtained from the organization itself through the Site Manager and forwarded to the Project Admin and HSE Officers.

Data Collection Method

In order to obtain accurate data from the variables studied in this study, several techniques such as questionnaire (questionnaire) and interview techniques were used.

Instrument(s) Testing

Validity Testing

According to Cooper et al. in Abdillah (2015), the validity test is carried out to determine the ability of the instrument to measure what it is supposed to measure. This study has two validity tests: the convergent validity test and the discriminant validity test using SmartPLS 3.2.6.

Reliability Testing

A reliability test is a tool to measure a questionnaire with variables or construct indicators. A questionnaire is reliable if a person's answer to the statement is consistent from time to time (Ghozali, 2005).

Data Analysis Technique

Descriptive Analysis

Descriptive analysis is used to analyze data by describing the data that has been collected as it is intended to make conclusions that apply to the public (generalizations) (Sugiyono, 2014).

Qualitative Analysis

In this study, quantitative analysis using SEM (Structural Equation Modeling) using the PLS (Partial Least Square) program to examine the relationship between variables is described as follows:

SEM (Structural Equation Modeling) Analysis

Structural Equation Modeling (SEM) is a statistical technique to test simultaneously (Iman Gozali in Erzen (2020).

Partial Least Square (PLS)

Measurement Model (outer model)

A measurement model determines the relationship between latent variables and indicators.Evaluation of the measurement mode (outer model) includes convergent validity, discriminant validity, and composite reliability tests, as presented in Table 1 below.

Table 1. Measurement Model Evaluation Criteria

Validity and Reliability	Parameters	Notes/Information
Convergent Validity	Loading Factor Value	It is valid if the loading value > 0.7. For the initial stage of development, the loading value > 0.5-0.6 is considered valid.
	Average Variance Extracted (AVE)	AVE > 0.5 is a good measure of convergent validity.
Discriminant Validity	*Cross Loading*	If the correlation of the construct with each indicator > the other construct measures, the latent construct predicts the indicator better than the other constructs.
	Square Foot of AVE	The square root value of AVE > the correlation value between the constructs/latent variables, then good discriminant validity is achieved.
	Cronbach's Alpha	Cronbach alpha ≥ 0.7 for Confirmatory Research; therefore, Cronbach alpha ≥ 0.6-0.7 is acceptable for Exploratory Research.
	Composite	*Composite Reliability ≥ 0.70 shows good reliability. Composite Reliability 0.60 – 0.70 is acceptable for exploratory research*

Source:Processed Data, (2021)

Structural Model (Inner Model)

The structural model tests the significance of the parameters formulated in the assessed hypothesis by examining the significance of the coefficients and variances accounted for by the construct (R^2) representing the dependent (endogenous) proportion. An $R^2 \geq 10$ ensures that the variance is explained by a practical, statistical, and significant endogenous variable.According to Mahfud in Erzen (2020), Endogenous variables mean variables that are influenced by other variables. The evaluation of the structural model (inner model/structural model), including R^2 for the dependent construct, p-value test, as well as the significance and coefficients of the structural path parameters, is presented as follows:

Table 2. Structural Model Evaluation Criteria

Testing	Criteria	Notes/Information
Model fit indices	APC	*Average Path Coefficient* (APC), *p- value < 0,1*
	ARS	*Average R-Square (ARS), p-value < 0,1*
	AVIF	*Average Variance Inflation Factor (AVIF) < 5*
Coefficient of Determination (R^2) for endogeneous latent variable	R^2	The R-Square value of 0.67 identifies a good model, 0.33 identifies a moderate model, and 0.19 indicates a weak model.
Path Coefficients	p-value	p-value <*a*, shows that it is significant.

Source: Processed Data, (2021)

Hypotheses Testing

Hypothesis testing in this study uses a full structural education modeling (SEM) model with SmartPLS.

Multiple Regression Analysis

The intervening variable is an intermediate or mediating variable whose function is to mediate the relationship between the independent and dependent variables. The intervening variables testing uses the path analysis method (path analysis). Regression analysis estimates the causal relationship between variables (causal model) that has been set previously based on theory.

Result And Discussions

In this chapter, the researcher describes the results of research and discussion the effect of compensation on employee performance through employee morale at PT Indokomas Buana Perkasa in Maredan Barat.Respondents in this study were 89 employees.From the research results, some necessary

data have been collected, including respondent identity, data regarding respondents' responses to compensation, employee morale, and employee performance.

Respondents' Identity

The identity of the respondents in this study includes gender, age, education level, the field of work, and years of service of employees at PT Indokomas Buana Perkasa in Maredan Barat.

Respondents Based on Sex

From the results of the study, it can be seen that the gender of the respondents in this study were 86 men and three women.

Respondents Based on Age

The results of the study showed the number of respondents based on the age of the respondents. The most significant number of respondents are younger because the company requires physically strong employees to do the challenging work in the field. Meanwhile, in the 40-45, employees have higher positions who only supervise their subordinates' work.

Respondents Based on Education Level

The level of education tends to influence a person's attitude, behavior, and mindset, especially in making decisions. In addition, the level of education can also affect a person's income. Those with a high level of education get a higher income than those with a lower level of education.

Respondents Based on Work Field

Based on the results of the study, we can see the respondents with their respective fields of work. Males dominate all fieldwork because it is a very tough job. On the other hand, the administration is dominated by women because they only work in the office to process data related to the project for the construction of the electrical substation, such as employee attendance data, employee turnover data, and financial data covering the project operational costs, and other data.

Respondents Based on Employees' Working Period

The year of service is the work experience of each employee at PT Indokomas Buana Perkasa in Maredan Barat. The year of service is a benchmark for how much experience employees gain in working in their respective fields. Based on the study results, six respondents worked the longest, between 16-20 years, and 22 people worked the least, between 0-5 years. However, the number of employees with the year of service between 11-15 years is the most, 32 people.

Descriptive Analysis of Compensation (X)

Wages and Salaries

Overall, from the results of the study, it is concluded that the indicators of wages and salaries can be categorized as strongly agree, with a total score of 854 in the interval 750 – 892. Therefore, overall the wages and salaries given following the contributions made by employees and periodically to the employees by PT Indokomas Buana Perkasa in Maredan Barat are appropriate/relevant.

Incentive

Overall, from the study results, it can be concluded that the response indicators for rewarding employees who excel and providing additional rewards such as vitamins, food, and beverages can be categorized as strongly agree with a total score of 855 in the interval 750-892. Therefore, the incentives provided by PT Indokomas Buana Perkasa in Maredan Barat given to employees are very appropriate.

Benefits

Overall, the study results conclude that the response indicators of the provision of allowances can be categorized as strongly agree with a total score of 854 in the interval 750-892. Therefore, overall the provision of allowances needed by employees at PT Indokomas Buana Perkasa in Maredan Barat is excellent.

Facilities

Overall, the study results conclude that the response indicators from the provision of facilities can be categorized as strongly agree with a total score of 851 within the interval 750-892. Therefore, overall the provision of facilities needed by employees at PT Indokomas Buana Perkasa in Maredan Barat is excellent.

Recapitulation of Respondents' Responses based on the Dimensions of Compensation

The study results show the recapitulation of respondents' responses to the dimensions of compensation at PT Indokomas Buana Perkasa in Maredan Barat. Therefore, overall the compensation can be considered very satisfactory, as illustrated by the responses of respondents in the category of strongly agree with the number of recapitulation results of 3,414 within the variable score interval 2996 - 3566.

Descriptive Analysis of Employees' Morale (Z)

Cooperativeness

Overall, the study results conclude that the response indicators from the cooperation can be categorized as strongly agree with a total score of 855 within the interval 750-892. Therefore, overall the

employees' cooperativeness at PT Indokomas Buana Perkasa in Maredan Barat is excellent.

Work Discipline

Overall, the study results conclude that the response indicators from the work discipline can be categorized as strongly agree with a total score of 851 within the interval 750-892. Therefore, overall the employees' work dicipline PT Indokomas Buana Perkasa in Maredan Barat is excellent.

Passion

Overall, the study results conclude that the response indicators from the passion can be categorized as strongly agree with a total score of 854 within the interval 750-892. Therefore, overall the employees' passion at PT Indokomas Buana Perkasa in Maredan Barat is excellent.

Recapitulation of Respondents' Responses based on the Dimensions of Employees' Morale

The study results show the recapitulation of respondents' responses to the dimensions of employees' morale PT Indokomas Buana Perkasa in Maredan Barat. Therefore, overall the employees morale can be considered very satisfactory, as illustrated by the responses of respondents in the category of strongly agree with the number of recapitulation results of 2,560 within the variable score interval 2246 - 2673.

Descriptive Analysis of Employees' Performance

Quantity of Results

Overall, the study results conclude that the response indicators from the quantity of results can be categorized as strongly agree with a total score of 849 within the interval 750-892. Therefore, overall the employees' quantity of results at PT Indokomas Buana Perkasa in Maredan Barat is excellent.

Accuracy of Results

Overall, the study results conclude that the response indicators from the accuracy of results can be categorized as strongly agree with a total score of 850 within the interval 750-892. Therefore, overall the employees' accuracy of results at PT Indokomas Buana Perkasa in Maredan Barat is excellent.

Attendance

Overall, the study results conclude that the response indicators from the employees attendance can be categorized as strongly agree with a total score of 852 within the interval 750-892. Therefore, overall the employees attendance at PT Indokomas Buana Perkasa in Maredan Barat is excellent.

Ability to Cooperate

Overall, the study results conclude that the response indicators from the ability to cooperate can be categorized as strongly agree with a total score of 852 within the interval 750-892. Therefore, overall the employees' ability to cooperate at PT Indokomas Buana Perkasa in Maredan Barat is excellent.

Recapitulation of Respondents' Responses based on the Dimensions of Employees' Performance

The study results show the recapitulation of respondents' responses to the dimensions of employees' performance at PT Indokomas Buana Perkasa in Maredan Barat. Therefore, overall the employees' performance can be considered very satisfactory, as illustrated by the responses of respondents in the category of strongly agree with the number of recapitulation results of 3,403 within the variable score interval 2996 - 3566.

Instrument(s) Testing

Measurement Model (Outer Model)

In the outer or measurement model's initial stage, the researcher designed the initial model under the hypothesized model, then processed and estimated primary data, the respondents' answer scores, using the SmartPLS 3.2.6 application. This step was carried out to determine a good model. It would be used as the researcher's hypothesis analysis. The estimation results of construct indicators with the Smartpls application in the initial model are presented in the following figure:

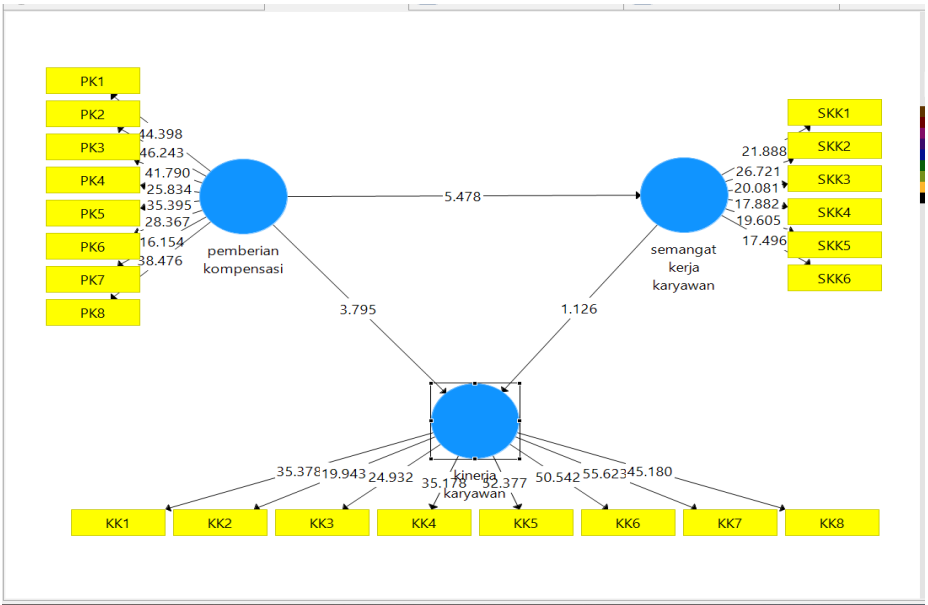

Figure 1 - Measurement Model (Outer Model)

Data Source :Smartpls Processed Data, 3.2 6

Validity Testing

Validity test analysis tests the data accuracy so that the results are not biased. Validity testing is divided into convergent validity and discriminant validity.

Convergent Validity Testing

The evaluation of the first stage of the measurement model was started by observing the results of the convergent validity test through the loading factor. The validity of the reflective indicator can be assessed based on the correlation between the indicator score and the construct score.The individual reflection measure is high if it correlates more than 0.70 with the measured construct. However, according to Chin (in Ghozali, 2013), for research in the early stages of developing a measurement scale, the loading value of 0.5 to 0.6 is sufficient.

Discriminant Validity Testing

Based on the data above, all indicators have met the criteria for discriminant validity. The variable of compensation as an independent loading value has exceeded > 0.50. In addition, the study results show that the correlation value of all indicators has a high correlation to the provision of compensation compared to the variables of employee performance and employee morale.It explains that all indicators in the compensation indicator meet the requirements of discriminant validity.

The dependent variable is the employee performance variable with a loading value exceeding > 0.50. In addition, the study results show that the correlation value of all indicators has a high correlation to employee performance compared to the variables of compensation and employee morale.It explains that all the indicators in the employee performance indicators meet the requirements of discriminant validity.

The employee morale variable as a mediating variable has a value that has exceeded > 0.50.In addition, the study results show that the correlation value of all indicators has a high correlation to employee morale compared to the variables of compensation and employee performance. It explains that all the indicators in the employee morale indicator meet the discriminant validity requirements.

In addition, to test the convergent validity, the researcher also observes the Average Variance Extracted (AVE) model. The construct has a good validity value if the AVE has a greater value than 0.5 (AVE > 0.5). From the estimation results of SmartPLS 3.2.6. the AVE curve obtained is presented as follows:

Table 3. Average Variance Extracted (AVE)

Variable	Average Variance Extracted (AVE)
Giving Compensation	0,867
Employees Performance	0,891
Employees' Morale	0,770

Data Source :Smartpls Processed Data, 3.2 6

Furthermore, to test the discriminant validity, the researcher also observed the average criteria for the model. The construct has a good validity value if the AVE has a greater value than 0.5 (AVE.0.5). From the estimation results of SmartPLS 3.2.6, the obtained AVE curve is presented as follows:

Table 4. Fornell – Lacker Criteria

Variable	Employees Performance	Giving Compensation	Employees' Morale
Employees Performance	0,944		
Giving Compensation	0,622	0,931	
Employees' Morale	0,476	0,619	0,878

Data Source :Smartpls Processed Data, 3.2 6

The study results show that the square root value of AVE along the diagonal line has a more significant correlation between one construct and another. Thus, it is expected to provide accuracy, precision, and inaccuracies in the research results.

Reliability Testing

In addition to the validity test, it is also necessary to test the reliability. This test evaluated the outer model by looking at the reliability of the later variable construct measured by two criteria. Cronbach alpha and composite reliability. A construct meets reliability if the Cronbach alpha value is > 0.7 and the composite reliability value is > 0.7. It indicates accuracy and consistency of a measuring instrument in making a measurement (Neuman in Hamdani 2013). The following table is the output of SmartPLS:

Table 5. Quality Criteria (Cronbach's Alpha dan Composite Realibility)

Variable	Cronbach's Alpha	Composite Reliability	Standard Reliability	Notes/Information
Employees Performance	0,982	0,985	0.7	Reliable
Employees' Morale	0,940	0,953	0.7	Reliable
Giving Compensation	0,978	0,981	0.7	Reliable

Data Source :Smartpls Processed Data, 3.2 6

Based on the measurement results, each construct's composite reliability value is greater than 0.7. Thus, all constructs in the estimated model meet the discriminant reliability requirements. The lowest composite reliability value in the employee morale construct is 0.953.

Structural Model (Inner Model)

Testing of the inner model or structural model is for observing the relationship between constructs, significant values, and R-square in this study. The structural model of this study can be seen in the following figure:

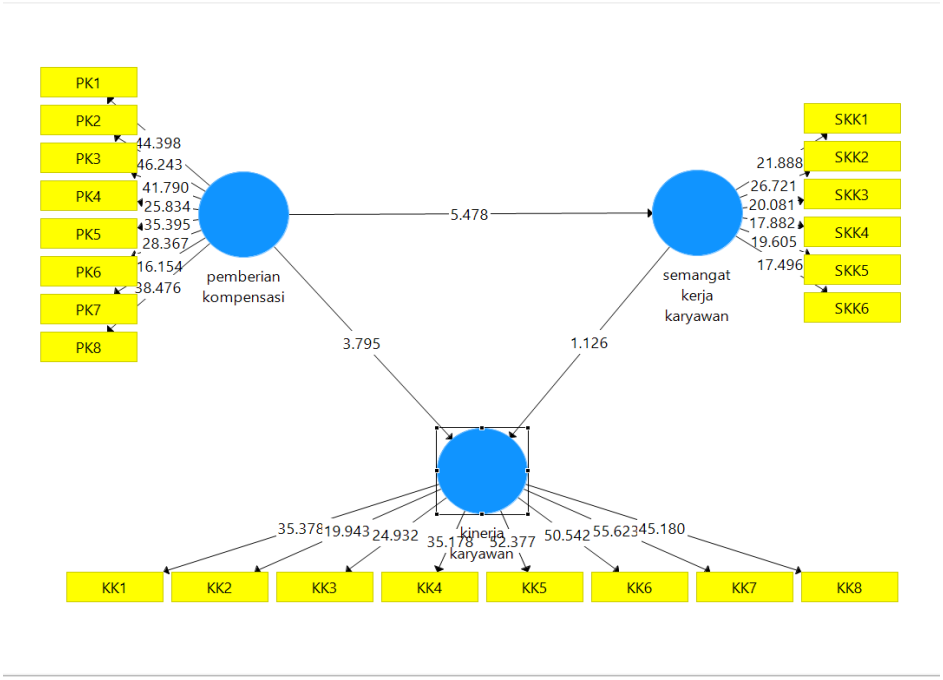

Figure 2 – Inner Model

Data Source :Smartpls Processed Data, 3.2 6

Furthermore, in this study, it is necessary to test the model fit.The following table shows the model fit values:

Table 6. Fit Model

	Saturated Model	***Estimated Model***
SRMR	0,057	0,057
d-ULS	0,812	0,812
d-G	n/a	n/a
Chi-Square	9950.553	9950.553
NFI	0,212	0,212

Data Source :Processed Data by Researcher, 2022

The subsequent analysis is to observe the model's explanatory power or nomological validity, which can be assessed through the R-Square (R2) of the endogenous constructsby assessing the effect of exogenous variables on endogenous variables. The higher the R-Square (R2) value, the better the model predicts.In the table below, it can be seen that the R-Square construct is based on the estimates made by the researcher:

Table 7. Inner Model – R-Square (R2)

Inner Model	R Square
Employees Performance	0,400

Employees' Morale	0,384

Data Source :Smartpls Processed Data, 3.2 6

Hypotheses Testing Result

Further hypothesis testing is described in the following part:

Hypothesis 1 Testing

a. H1It is suspected that there is a significant effect of the compensation variable (X) on employee morale (Z) at PT Indokomas Buana Perkasa in Maredan Barat.

b. Decision-making is based on:

if the p-value ≤ 0.05, the hypothesis is accepted.

if the p-value > 0.05, the hypothesis is rejected.

c. The p-value of 0.000 ≤ 0.05 marks that H1 is accepted.

d. The test results in the structural model figure show that the compensation variable has a positive and significant effect on employee morale with a p-value of 0.000.The path coefficient value is 0.619, indicating that for every 1 unit increase in compensation, employee morale will increase by 0.619.

Hypothesis 2 Testing

a. H2It is suspected that there is a significant effect of the compensation variable (X) on employee performance (Y) at PT Indokomas Buana Perkasa in Maredan Barat.

b. Decision-making is based on:

if the p-value ≤ 0.05, the hypothesis is accepted.

if the p-value > 0.05, the hypothesis is rejected.

c. The p-value of 0.000 ≤ 0.05 marks that H2 is accepted.

d. The test results in the structural model figure show that the compensation variable has a positive and significant effect on employee morale with a p-value of 0.000.The path coefficient value is 0.530, indicating that for every 1 unit increase in compensation, employee performance will increase by 0.530.

Hypothesis 3 Testing

a. H3:It is suspected that there is an insignificant effect of the employee morale variable (Z) on employee performance (Y) at PT Indokomas Buana Perkasa in Maredan Barat.

b. Decision-making is based on:

if the p-value ≤ 0.05, the hypothesis is accepted.

if the p-value > 0.05, the hypothesis is rejected.

c. The p-value of 0.272> 0.05 marks that H3 is is rejected.

d. The test results in the structural model figure show that the employees morale has a positive has a positive but insignificant effect on employee performance with a p-value of 0.272.The path coefficient value is 0.148, indicating that for every 1 unit increase in employee morale, employee performance will increase by 0.148.

Hypothesis 4 Testing

a. H4:It is suspected that Compensation (X) has the insignificant influence on employee performance (Y) through employee morale (Z) at PT. Indokomas Buana Perkasa in Maredan Barat.

b. Decision-making is based on:

if the p-value ≤ 0.05, the hypothesis is accepted.

if the p-value > 0.05, the hypothesis is rejected.

c. The p-value of 0.306> 0.05 marks that H4 is is rejected.

d. The test results in the structural model figure show that the Compensation has a positive but insignificant effect on employee performance and is intervened with employee morale variable with a p-value of 0.306.The path coefficient value is 0.092, indicating that for every 1 unit increase in compensation, employee morale and also the employee performance will increase by 0.092.

Conclusion And Suggestion

Conclusion

Based on the theoretical studies and the formulation of the problems discussed above, the following conclusions are drawn:

1. The descriptive analysis of the research that has been done shows that the provision of compensation, employee performance, and employee morale at PT Indokomas Buana Perkasa in Maredan Barat is in the category of strongly agree and agree.In the compensation variable, the highest dimension is the provision of incentives, while the lowest is the provision of facilities.In the variable of employee morale, the highest dimension is cooperation, while the lowest dimension is the dimension of work discipline.Then for the employee performance variable, the highest dimension is the presence and ability to cooperate, while the lowest is the quantity dimension of the results.

2. Based on the results of this study, it was found that compensation has a positive and significant effect on employee morale at PT Indokomas Buana Perkasa in Maredan Barat.

3. Based on the results of this study, it was found that compensation has a positive and significant effect on employee performance at PT Indokomas Buana Perkasa in Maredan Barat.
4. Based on the results of this study, it was found that employee morale has a positive but insignificant effect on employee performance at PT Indokomas Buana Perkasa in Maredan Barat.
5. Based on results of this study, it was found that compensation has a positive but insignificant effect on employee performance through employee morale at PT Indokomas Buana Perkasa in Maredan Barat.These results indicate that the effect of compensation on employee performance through employee morale is smaller than the direct effect of compensation on employee performance. Thus, it can be concluded that employee morale as an intervening variable has a small effect on this study.Compensation given to employees can create a sense of compliance with company regulations and responsibility at work.An increase in the provision of compensation followed by an increase in employee morale can improve employee performance.The higher the compensation and employee morale, the higher the employee's performance will be.

Suggestion

Based on the results of the research that has been carried out, the researcher will put forward suggestions for PT Indokomas Buana Perkasa in Maredan Barat.The suggestions from the author are as follows:

1. For companies

The board leaders of PT Indokomas Buana Perkasa in Maredan Barat have to pay attention to the performance of their employees. It is because the employee's performance is still relatively low. It is represented by the number of absent employees shown on the attendance table.In this study, the results showing that the provision of compensation significantly affected employee performance through employee morale were rejected.The effect of compensation on employee performance through employee morale has a smaller effect than direct influence.It means that employee morale as an intervening variable has a small effect on this study.Increased compensation followed by employee morale will improve employee performance.

2. For future researchers

For further researchers, examining more sources and references related to human resource science, especially the provision of compensation, employee morale, and employee performance, is suggested.Thus, the future study results will be better and more complete.In addition, choosing other objects is suggested to know better the effect of each variable used in this study.

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Issue Article

M.Q. Mengdobilova
Chirchik State Pedagogical University of Tashkent region
academic lyceum teacher, independent researcher

TEACHING THE SCIENCE OF «EDUCATION» IN THE CONDITIONS OF GLOBALIZATION AS A NEED AND A NECESSITY

Abstract: *In this article, the process of globalization and popular culture on the world scale, the negative impact of the process of globalization on youth education, nationalism, the result of reforms in the system of teaching social and humanitarian sciences in our country, including the teaching of the subject "Education" in general education schools in the education of a competent generation, as well as in the formation of ideological immunity significance was analyzed.*

Key words: *globalization process, mass culture, ideological threats, Western individualism, egocentrism, nihilism, indifference, cynicism, violence, manqurt, moral disarmament, national values, national education, enlightenment.*

Language: *English*

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Introduction

In the 21st century, humanity is witnessing the positive and negative aspects of the globalization process. The introduction of new innovative technologies, the strengthening of integration between countries, active cooperation in the development of science and technology, education, and culture are showing positive aspects in human life, the introduction of mass culture increases people's interest in how to earn more money, nationalism, national character on earth. On the basis of its disappearance, the penetration of the whole humanity into the common character and image is reflected as a negative feature of globalization.

The disintegration of the USSR increased political, economic and ideological threats of various forms and content to the countries of Central Asia, including our country. In this process, high spirituality, broad worldview, formation of thinking, education in the spirit of awareness and vigilance in the growing young generation has become the demand of the times. Because, there is a possibility that the young generation who do not have the ability to think, analyze, and perceive will become a manqurt who only performs the task.

Manqurts do not care about yesterday, today, and the future and do not appreciate the dignity, rights, and values that are necessary for a person. At this point, it is of great importance to educate the young generation to believe in our country and their future in their education, in their personal life, in their future work activities, and to act decisively in the community. Every spiritual and conscious person should have a sense of pride in his country and try to be worthy of it. Its development, formation and correct education of the young generation based on national values is an important task before every state and society [7;114].

In the period of active reforms, when Uzbekistan is moving towards building a civil society, it is important to have a high level of legal literacy of citizens and to educate young people who are ready to actively participate in all aspects of society in this process, have their own independent opinion, and understand their rights and duties. Education of the individual in humanistic society has been considered the most urgent social and pedagogical problem. Man himself is responsible for creating goodness in himself, for spiritual growth, but at the same time, it cannot be denied that the role of education in human growth is extremely large [6].

Literature analysis.

Many foreign and local researchers have conducted research on the manifestations of the globalization process, its impact on social life and youth education. carried out fundamental research on its importance and consequences, I.A. Mayburov, P. Scott, O.B. Boykova, A.A. Lucknow conducted scientific research on the impact of this process on the field of education. Local researchers such as N.Alimatova, M.Mamajonova, M.Nabiev, M.Mamatmusaeva, T.Tashmetov mainly focused on the issue of globalization and the ideological influence of popular culture on youth education.

Nowadays, the process of globalization is attracting new areas and regions to its tent of all spheres of human activity. It is clear to all of us that the process of globalization serves as an important tool for people to absorb their own ideas and ideologies, to expand their spheres of influence, especially in the ideological and spiritual sphere. If we observe the process of globalization in the field of information and communication alone, we will see that its influence is becoming the main weapon for ideological and cultural hegemony in the world. Countries with advanced information technologies are the driving force of this process.

The process of globalization affects all spheres of social life and connects individual countries with the world community. Today, globalization is a legitimate historical process in the development of society, and the human society expresses changes in the quality of new civilization. The processes of globalization in spiritual life, the activation of information delivery through the mass media, the Internet, radio, television, and mobile communications have both positive and negative consequences. if it is important, on the other hand, the introduction of various harmful ideas and ideologies into the life of our society puts the task of raising a mature generation and strengthening their ideological immunity as an urgent issue. Conflicts related to the process of globalization are manifested, first of all, in the cultural and educational sphere. The opportunities created by globalization are now being used by political and ideological centers that are trying to fill the spiritual vacuum.

It should be noted that as a result of this, great moral losses have been caused by humanity, the age-old values of the nation, national thinking and lifestyle are being lost, morals, family and community life, and conscious way of life are in danger. The spiritual threat is aimed at endangering human freedom, making them ideologically dependent, derailing their spiritual world, and it hides behind attractive slogans and ideas, attacks religious ties. threatens national interests and brings the society to the crisis street. It is known to us that a nation that is spiritually disarmed and its spiritual roots are weakened as a result becomes powerless even in the face of the simplest danger [5; 48-51].

In the process of globalization, young people are moving away from national values and moral norms as a negative result of the high level of development of informational tools. Secondly, various manifestations of "popular culture" are spreading widely among young people. In particular, Western individualism, egocentrism, nihilism, indifference, cynicism and violence, disregard for national values and social interests are causing vices. From the middle of the 20th century, mass media began to have a strong influence on mass culture, and by the end of the century and the beginning of the 21st century, this influence became stronger.

Popular culture, or as it is called in the West, "popular culture" today is fighting against the classic culture, art, and wealth of peoples and nations, denying its achievements. Therefore, today, the citizens of our country, from the spiritual and moral foundations of mass culture, first of all, should protect the youth, call to the awareness of our growing young generation, save their psyche, intellect and spirituality in general, in addition to the danger of religious fanaticism and ignorance, at the same time, which is happening in the world. it also includes protection from the harmful effects of political, ideological, social, economic, spiritual interests [9; 145-148]. President of the Republic of Uzbekistan Sh.Mirziyoev said, "When talking about the education of the young generation, I would very much like that each of us, especially our sons and daughters who are coming into life, follow these thoughts of our grandfather Abdurauf Fitrat." It depends on the education they received from their parents in their childhood, whether they move towards a specific goal, become statesmen, get respect by being happy, become worldly or humiliated by being weak, bear the burden of misfortune, being neglected, subordinated to others, slaves, captives. The deep meaning and significance of these words becomes clear if we take into account the growing danger of religious extremism, terrorism, drug addiction, human trafficking, illegal migration, mass culture, and the dangers of religious extremism, terrorism, illegal migration, mass culture around us. ” [2;3].

One of the important signs of globalization is that developing countries fall under the influence of developed countries, and the most optimal and effective way to combat this is to strengthen the foundations of national education. In this place, the words "education" and "education" are 1) to take care of; to teach; to teach; 2) caressing; show kindness; to be eyes and ears; protection; has multiple meanings such as [4;125]. Education is such a process that it is not a seasonal work, intended for a certain time, but a permanent, continuous process and a strategic issue of importance to the society and the state. The educational process is considered as a dynamic

system, which is carried out by the interaction of the teacher and the student. The educational process is the core of the pedagogical activity of the educational institution [8; 82]. The main goal of education is to create conditions for the development of a capable person with stable moral behavior, self-determination, self-adjustment in society, patriotism, civic and spiritual-moral education, healthy lifestyle.

In our opinion, the educational process can be real only if it is specially designed, that is, it is a purposeful system that is combined with the child's self-development and self-management capabilities. Based on universal human values and today's realities, a person of the 21st century should be physically healthy, spiritually and morally, intellectually developed, independent thinker, at the same time, he should not be indifferent to the processes taking place in the world, and should be in active contact with the outside world. The period of formation and socialization of the child as a person takes place in the school system. Therefore, a number of systematic reforms were implemented in the teaching of social and humanitarian sciences in secondary schools in our republic.

Taking into account the age and psychophysiological characteristics of students of general secondary educational institutions, in order to inculcate universal human values and high spirituality in their minds, to educate them in the spirit of patriotism and humanitarianism, to organize spiritual and educational work in general secondary educational institutions on a new basis, based on the decision of the Cabinet of Ministers, 4 social - It was decided to gradually introduce the science of "Education", which is a union of humanitarian sciences.

In 2020, the concept of the science of "Education" was adopted, and the concept was directed to solving the current problems in the implementation of the state's policy in the field of education, and the concept defined priorities, main goals and directions aimed at bringing the work in the education of the young generation to a new level [1].

The directions defined in the concept serve to further expand the legal framework, economic opportunities and organizational mechanisms in order to educate the youth of the country mentally and physically, to realize their talent and potential, to involve them in the development of the state and society, and to adequately support their initiatives. This concept is based on the Constitution of the Republic of Uzbekistan, the laws of the Republic of Uzbekistan "On Education", "On State Policy Regarding Youth", generally recognized documents of international law, in particular, the conventions "On the Rights of the Child", "On the Guarantees of the Rights of the Child", the United Nations It is based on the "Youth-2030" strategy and the legislation of the Republic of Uzbekistan on education..

The tasks defined in the concept are carried out in harmony with the requirements of the action strategy for the five priority directions of the development of the Republic of Uzbekistan, the concept of continuous spiritual education, national and international best practices, and social and political changes in our country. The concept is to ensure the age-appropriate spiritual development of students in the general secondary education system and to form active civic competences. Subjects included in the series "The Idea of National Independence: Basic Concepts and Principles" taught in general secondary schools are "Etiquette", "Feeling of the Motherland", "Idea of National Independence and Spirituality". defines the main directions of the single discipline of Education, which combines the disciplines "Foundations of Spirituality", "History of World Religions". At the same time, it is determined to ensure consistency and proportionality of activities of state bodies, non-governmental non-profit organizations, and private sector participating in the implementation of policy in the field of education in our country.

The introduction of this subject in general education schools is directly related to the demand and necessity of the time. As the science of "education" includes all-round, mental, spiritual, intellectual, moral, religious, physical, economic, aesthetic (and so on) training of students, future science teachers are required to be highly spiritual and broad-minded. The reason is that this science is a combination of such sciences as philosophy, morality, religion, ethics, aesthetics, psychology and entrepreneurship. The science of "Education" is of great importance in educating the young generation in accordance with the requirements of society, in protecting against the negative aspects of globalization and mass culture.

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Issue Article

Shuxrat Isroilovich Jo'raev
Bukhara State University
Senior Lecturer to Department of Technology Engineering,
Bukhara, Republic of Uzbekistan

ON EQUIVALENT LINEAR INTEGRO-DIFFERENTIAL EQUATIONS WITH GIVEN KERNELS

Abstract: *An elastic problem is considered and its analytical solution is constructed. Was proved the theorem that a linear differential equation with polynomial coefficients corresponds to an equivalent Voltaire type integral equation of the 2nd kind with degenerate kernels containing only power and exponential functions, and the exponents can be specified in advance. As an example, the Bessel equation is given.*

Key words: *differential equation, polynomial coefficient, images, integral equation, Bessel equation.*
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ОБ ЭКВИВАЛЕНТНЫХ ЛИНЕЙНЫХ ИНТЕГРО -ДИФФЕРЕНЦИАЛЬНЫХ УРАВНЕНИЯХ С ЗАДАННЫМИ ЯДРАМИ

Аннотация: *Рассматривается упругая задач и строится ее аналитическое решение. Доказана теорема, что линейному дифференциальному уравнению с полиномиальными коэффициентами соответствует эквивалентное интегральное уравнение типа Вольтерра 2-го рода с вырожденными ядрами, содержащими только степенные и экспоненциальные функции, причем показатели экспонент могут задаваться заранее. В качестве примера приводится уравнение Бесселя.*

Ключевые слова: *дифференциальное уравнение, полиномиальной коэффициент, изображение, интегральное уравнение, уравнение Бесселя.*

Введение

Рассматривается упругая задач для тела с модулями упругости G', K' и строится ее аналитическое решение. В этом решении напряжения, деформации, перемещения, объемные силы и граничные функции заменяются их изображениями, а модули упругости - преобразованными функциями материала. Затем применяют обратное преобразование Лапласа и находят решение задачи, где отсутствует условие однородности. Интегральные операторы зависят от координат, поэтому нельзя применять метод разделения переменных. Преобразования Лапласа нельзя применять для решения задач с переменными коэффициентами.

Основные соотношения теории вязко упругости имеют вид [1,2,3]

$$\vec{S}^*_{jk} = 2G[1-r^*]e^*_{jk}\ ;\ \sigma^* = K'\Theta^*;$$

$$S^*_{jk} = 2G'e^*_{jk}\ ; G' = G[1-r^*].$$

Рассмотрим вспомогательную задачу, которая применяется для решения задач вязко упругости. Пусть дано линейное дифференциальное уравнение

$$P_n(t)y^n + P_{n-1}(t)y^{n-1} + \ldots + P_1(t)y' + P_0(t)y = f(t), \quad (1)$$

где $P_n(t), P_{n-1}(t), \ldots, P_0(t)$ - полиномы степени не выше m, $f(t)$ - некоторая кусочно-непрерывная функция.

По теореме дифференцирования изображения [4,5]

$$t^m y(t) \xleftarrow{\cdot}{\cdot} (-1)^m p \frac{d^m}{dp^m}\left[\frac{Y(p)}{p}\right]. \quad (2)$$

Причем $J(p) \xrightarrow{\cdot}{\cdot} y(t)$, и после операционного преобразования уравнению (1) соответствует линейное дифференциальное уравнение m - го порядка

$$R(p)p\frac{d^m}{dp^m}\frac{Y}{p} + R_{m-1}(p)p\frac{d^{m-1}}{dp^{m-1}}\frac{Y}{p} + \\ +\ldots + R_1(p)p\frac{d}{dp}\frac{Y}{p} + R_0(p)Y = F(p) \quad (3)$$

где $R_m(p), R_{m-1}(p), \ldots, R_0(p)$ - полиномы степени не выше n $(\le n)$, $F(t)$ - функция, содержащая начальные значения и изображение правой части уравнения (1).

Пусть, например, $R_k(p)$ - полином степени n, т.е. степени не меньшей, чем степени остальных полиномов $R_m(p), \ldots, R_{k+1}(p), R_{k-1}, \ldots, R_0(p)$.

Тогда в развитии (1) имеет место следующая теорема.

Теорема. Линейному дифференциальному уравнению с полиномиальными коэффициентами соответствует эквивалентное ему интегральное уравнение Вольтерра 2-го рода с вырожденными ядрами, содержащими только степенные или степенные и экспоненциальные функции, причем показатели экспонент могут задаваться заранее.

Доказательство. Пусть полином $R_k(p)$ записывается как

$$R_k(p) = a_n^{(k)}p^n + a_{n-1}^{(k)}p^{n-1} + \\ +\ldots + a_1^{(k)}p + a_0^k. \quad (4)$$

Представим (4) в виде

$$R_k(p) = a_n^{(k)}p^n + Q_k(p), \quad (5)$$

где $Q_k(p)$ - полином степени не выше (n-1) $\le n-1$. Тогда из (3) получаем

$$a_n^{(k)}p\frac{d^k}{dp^k}\frac{Y}{p} = \frac{F(p)}{p^n} - \frac{R_0(p)}{p^n}Y - \\ -\ldots - \frac{R_{k-1}(p)}{p^n}p\frac{d^{k-1}}{dp^{k-1}}\frac{Y}{p} - \\ -\frac{Q_k(p)}{p^n}p\frac{d^k}{dp^k}\frac{Y}{p} - \frac{R_{k+1}(p)}{p^n}p\frac{d^{k+1}}{dp^{k+1}}\frac{Y}{p} - \\ -\ldots - \frac{R_m(p)}{p^n}p\frac{d^m}{dp^m}\frac{Y}{p} \quad (6)$$

Поскольку n высшая степень показателя, то после почленного деления числителей дробей на p^n, соотношение (6) переписывается как

$$a_n^k p\frac{d^k}{dp^k}\frac{Y}{p} = \frac{F(p)}{p^n} - \\ -\sum_{r=0}^{m}\sum_{s=0}^{n}\frac{b_{rs}}{p^r}p\frac{d^s}{dp^s}\frac{Y}{p}. \quad (7)$$

Найдем оригиналы отдельных членов соотношения (7). Изображение первого члена правой части (7) находится обычными способами. Пуст

$$\frac{F(p)}{p^n} \xrightarrow{\cdot}{\cdot} \psi(t) \quad (8)$$

Для членов под знаками суммирования, очевидно, будет

$$\frac{b_{rs}}{p^r}p\frac{d^s}{dp^s}\frac{Y}{p} = \\ = \frac{1}{p}\frac{b_{rs}}{p^{r-1}}p\frac{d^s}{dp^s}\frac{Y}{p} \xrightarrow{\cdot}{\cdot} (-1)^s\frac{b_{rs}}{(r-s)!}\int_0^t (t-\tau)^{r-1}\tau^s y(\tau)d\tau,$$

$$b_{os}p\frac{d^s}{dp^s}\frac{Y}{p} \xrightarrow{\cdot}{\cdot} (-1)^s b_{os}t^s y(t), \quad (9)$$

$$r = 1,2,\ldots,m; s = 0,1,\ldots,n$$

Значит, исходному дифференциальному уравнению (1) соответствует эквивалентное интегральное уравнение

$$\left[(-1)^k a_n^{(k)}t^k + \sum_{s=0}^{m}(-1)^s b_{os}t^s\right]y(t) = \\ = \Psi(t) - \sum_{r=0}^{m}\sum_{s=0}^{n}(-1)^s\frac{b_{rs}}{(r-s)!}\cdot \\ \cdot\int_0^t (t-\tau)^{r-1}\tau^s y(\tau)d\tau, \quad (10)$$

Представим теперь (4) в виде

$$R_k(p) = a_n^{(k)}(p-p_1)^{V_1}(p-p_2)^{V_2}\cdot \\ \cdot\ldots(p-p_N)^{V_N} + M_k(p), \quad (11)$$

где $V_1, V_2, \ldots, V_N$ - целые числа , такие, что $V_1 + V_2 + \ldots + V_N = n$; $T_k(p)$ - остаточный полином степени не более $n-1$; $p_1, p_2, \ldots, p_N$ - желаемые показатели экспонент в ядрах. Тогда из (3)

$$a_n^{(k)}p\frac{d^k}{dp^k}\frac{Y}{p} = \frac{F(p)}{\prod_{i=1}^{N}(p-p_i)^{V_i}} - \\ -\frac{R_0(p)}{\prod_{i=1}^{N}(p-p_i)^{V_i}} - \ldots -$$

$$-\frac{R_{k-1}(p)}{\prod_{i=1}^{N}(p-p_i)^{V_i}}p\frac{d^{k-1}}{dp^{k-1}}\frac{Y}{p}-$$
$$-\frac{T_k(p)}{\prod_{i=1}^{N}(p-p_i)^{V_i}}p\frac{d^{k}}{dp^{k}}\frac{Y}{p}-$$
$$-\frac{R_{k+1}(p)}{\prod_{i=1}^{N}(p-p_i)^{V_i}}p\frac{d^{k+1}}{dp^{k+1}}\frac{Y}{p}-\ldots-$$
$$-\frac{R_m(p)}{\prod_{i=1}^{N}(p-p_i)^{V_i}}p\frac{d^{m}}{dp^{m}}\frac{Y}{p} \qquad (12)$$

Разлагая далее отношения полиномов на простые дроби, переписываем (12) как

$$a_n^{(k)}p\frac{d^k}{dp^k}\frac{Y}{p}=\frac{F(p)}{\prod_{i=1}^{N}(p-p_i)^{V_i}}-$$
$$-\sum_{n=1}^{m}\sum_{r=1}^{N}\sum_{s=1}^{V_r}\frac{C_{rs\lambda}}{(p-p_r)^s}p\frac{d^{\lambda}}{dp^{\lambda}}\frac{Y}{p}-$$
$$-\sum_{\lambda=0}^{m}C_{\lambda}p\frac{d^m}{dp^m}\frac{Y}{p} \qquad (13)$$

Изображение первого члена правой части (13) находится обычными способами. Пусть

$$\frac{F(p)}{\prod_{i=1}^{N}(p-p_i)^{V_i}}=\dot{\to}\varphi(t) \qquad (14)$$

Для членов под знаками суммирования, очевидно, будет

$$\frac{1}{p}\frac{C_{rs\lambda}}{(p-p_r)^s}p\frac{d^{\lambda}}{dp^{\lambda}}\dot{\to}$$
$$\dot{\longrightarrow}\frac{C_{rs\lambda}}{(s-1)!}\int_0^t(t-\tau)^{s-1}e^{p_r(t-\tau)}\tau^{\tau}y(\tau)d\tau \qquad (15)$$

Значит, исходному дифференциальному уравнению (I) соответствует эквивалентное ему интегральное уравнение

$$\left[a_n^{(k)}(-1)t^k+\sum_{\lambda=0}^{m}C_{\lambda}(-1)^{\lambda}t^{\lambda}\right]y(t)=\varphi(t)- \qquad (16)$$
$$\sum_{\lambda=1}^{m}\sum_{r=1}^{N}\sum_{s=1}^{V_r}\frac{C_{rs\lambda}}{(s-1)!}\int_0^t(t-\tau)^{s-1}e^{p_r(t-\tau)}\tau^{\tau}y(\tau)d\tau$$

что и требовалось доказать.

Очевидно, в качестве величин $P_1,P_2,\ldots,P_N$ могут быть взяты корни полинома $R_k(p)$. Тогда $Q_k(p)=0$. Если же величины $P_1,P_2,\ldots,P_N$ - комплексные, попарно сопряженные, то ядро будет содержать гармонические функции заданного периода. Нулевые корни не вносят принципиальных трудностей. Наличие вполне определенных функций под знаками интеграла интересно для итерационных и вычислительных процессов [6,7].

Пример. Уравнение Бесселя

$$t^2\ddot{y}+t\dot{y}+(t^2-n^2)y=0. \qquad (17)$$

После операционного преобразования, имеем

$$(1-n^2)F(p)+3p\frac{dF(p)}{dp}+$$
$$(p^2+1)\frac{d^2F(p)}{dp^2},$$

где

$$F(t)=\frac{Y(p)}{p},\qquad Y(p)\dot{\longrightarrow}y(t)$$

,

Отсюда

$$\frac{d^2F(p)}{dp^2}=-\frac{3p}{p^2+1}\frac{dF}{dp}+\frac{n^2-1}{p^2+1}F(P)$$

и, находя оригиналы отдельных членов, получаем интегральное уравнение

$$t^2y(t)=3\int_0^t\tau y(\tau)\cos(t-\tau)d\tau+$$
$$+(n^2-1)\int_0^t y(\tau)\sin(t-\tau)d\tau. \qquad (18)$$

Заметим, что все вышеприведенные выкладки можно применить и к нелинейным дифференциальным уравнениям, например, к уравнению Дюффинга

$$m\ddot{x}+k\dot{x}+(x+\alpha x^3)=f(t). \qquad (19)$$

Действительно, делая преобразование Лапласа, получаем из (19)

$$(mp^2X-p^2x_0-p\dot{x}_0)+h(pX-px_0)+$$
$$+kx+k\alpha Z\{x^3\}=F(P), \qquad (20)$$

где $X(p)\dot{\longrightarrow}x(t)$,

$F(p)\dot{\longrightarrow}f(t), Z\{x^3\}\dot{\longrightarrow}x^3$.

Возможны два варианта:

1) делим обе части (20) на p^2, что после обратного преобразование дает (см. также (3))

$$x(t) = x_0 + \dot{x}_0 t + \\ + \frac{h}{m}\int_0^t [x_0 - x(\tau)]d\tau - \\ - \frac{k}{m}\int_0^t (t-\tau)\left[x(\tau) + \alpha x^3(\tau)\right]d\tau + \\ + \frac{1}{m}\int_0^t (t-\tau) f(\tau) d\tau \; ; \qquad (21)$$

2) перепишем (20) в виде

$$X(p) = \frac{mp^2 x_0 + (m\dot{x}_0 + hx_0)p}{mp^2 + hp + k} - \\ \frac{k\alpha}{mp^2 + hp + k} Z\{x^3\} + \frac{F(p)}{mp^2 + hp + k}. \qquad (22)$$

Теперь после обратного преобразования получим интегральное уравнение с вырожденным ядром, содержащим экспоненты от собственных чисел линейной части исходного дифференциального уравнения. Нетрудно видеть, что если поделить обе части (20) на соответствующий полином 4-го порядка по P, то можно получить в интегральном уравнении ядра с желаемыми показателями экспонент [8,9].

Общее определяющее уравнение нелинейной вязко упругости, следуя идее Фреше, Вольтерра предложил записать в следующем виде

$$\varepsilon(t) = \int_{-\infty}^t J_1(t-\tau_1)d\sigma(\tau_1) + \\ + \int_{-\infty}^t \int_{-\infty}^t J_2(t-\tau_1, t-\tau_2)d\sigma(\tau_1)d\sigma(\tau_2) + \ldots \qquad (23)$$

Эта идея была забыта на протяжении полувека, и лишь в 60-х годах ею стали пользоваться для интеграции опытных данных. Авторы удерживали в формальном ряде (23) лишь два члена и описывали поведение материала с помощью двух ядер $J_1(x)$ и $J_3(x,y,z)$, так называемая кубическая нелинейная теория вязко упругости. Если увеличивать число членов в разложении (23), расчётные трудности резко возрастают. Используют упрощенный вариант теории.

Нелинейная модель А. Н. Работнова:

$$\varphi[\varepsilon(t)] = \sigma(t) + \int_{-\infty}^t \kappa(t-\tau)\sigma(\tau)d\tau. \qquad (24)$$

Уравнение (2) является частным случаем уравнения (24). Справедлива гипотеза: изохронные кривые $\sigma - \varepsilon$, t подобны. Пусть все функции ползучести в (23) имеют одну структуру, т. е.

$$J_k(t-\tau_1,\ldots,t-\tau_k) = a_k \prod_{m=1}^k J_0(t-\tau_m).$$

Положим теперь

$$S(t) = \int_{-\infty}^t J_0(t-\tau)d\sigma(\tau) = (1+K)\sigma$$

где K - оператор, тогда имеем формальный ряд, который определяет ε как функцию S.

Предположив возможности ее обращения, запишем

$$S = \varphi(\varepsilon)$$

или

$$\varphi[\varepsilon(t)] = (1+K)\sigma = \sigma(t) + \int_{-\infty}^t \kappa(t-\tau)\sigma(\tau)d\tau,$$

$$\varepsilon(t) = \sum_{k=1}^{\infty} a_k \left[\sigma(t) + \int_{-\infty}^t \kappa(t-\tau)\sigma(\tau)d\tau\right]^k.$$

В случае подобия кривых ползучести, уравнения нелинейной последовательности могут быть представлены в форме Лидермана-Розовского [10,11]

$$\varepsilon(t) = \phi(\sigma) + \int_0^t \kappa(t-\tau)F[\sigma(\tau)]d\tau.$$

Вариант нелинейной теории, учитывающий зависимость механических характеристик от величины гидростатического давления.

Эти зависимости не учитываются классическими моделями, в которых разделяются соотношения между девятерными величинами и соотношения между первыми инвариантами напряжений и деформаций.

Модель В. В. Москвитина:

$$\phi_1(\varepsilon_u,\theta)e_{ij} = f_1(\sigma_u,\sigma)S_{ij} + \\ + \int_0^t \kappa(t-\tau) f_1(\sigma_u,\sigma)S_{ij}d\tau \qquad (25)$$
$$\phi_2(\theta,\varepsilon_u)K_0\theta = f_2(\sigma,\sigma_u)\sigma + \\ + \int_0^t \kappa_1(t-\tau) f_2(\sigma,\sigma_u)\sigma(\tau)d\tau.$$

Здесь σ_u - интенсивность напряжений; K_0 - объемный модуль

$$\sigma_u = \left(\frac{3}{2}S_{ij}S_{ij}\right)^{1/2}, \quad \sigma_u = \sqrt{3}T, \; \varepsilon_u = \frac{\Gamma}{\sqrt{3}},$$

ε_u - интенсивность деформаций.

Если $r(t)$ и $r_1(t)$ - результат, соответствующий ядру ползучести $\kappa(t)$ и $\kappa_1(t)$, то из (4) получаем:

$$f_1(\sigma_u,\sigma)S_{ij} = \phi_1(\varepsilon_u,\theta)e_{ij} - \\ - \int_0^t r(t-\tau)\phi_1(\varepsilon_u,\theta)e_{ij}(\tau)d\tau.$$

Предполагается, что функции f_1, ϕ_1 и f_2, ϕ_2 являются универсальными, не зависящими от вида напряженного состояния. Эти функции и ядра определяют из опытов на ползучесть и релаксацию.

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Issue Article

Nigina Alisher qizi Aliboyeva
Termez State University
The teacher of "English language and literature" department
Tel: +998944631014
ratina8895@mail.ru

APPROACHES TO THE ANALYSIS OF LITERARY TEXT TRANSLATION IN MODERN TRANSLATION STUDIES

Abstract: *This article deals with the problems of translation of children's fiction based on the analysis of foreign works. Scientific works of foreign and our researchers are analyzed.*

Key words: *translation, fiction, cultural aspect, literature, polysystem, methodological base, various strategies, methodological approach.*

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Introduction

The problem of translating children's literature plays an important role in the socio-cultural education and development of the young generation of any culture and people. It should be noted that studies of the problems of translation of children's fiction appeared not so long ago, which determines the relevance of the chosen topic.

The American poet, translator-scientist J. Holmes first proposed the term "translation studies" (Translation Studies), there was a gradual departure from the purely linguistic concept of translation to the modern interpretation of it as a tool for intercultural communication.

In world translation studies, special attention is paid to the study of the problems of translation of children's literature in various aspects, concretizing in the works of many foreign scientific researchers such as E. Kseni, V. Dukmak, A. Chelalga., H. Z. Hussein, T. Reinbert, Sh Bury, T. V. Gabriele et al.

Special attention is drawn to the scientific work of E. Xeni "Issues of Concern in the Study of Children's Literature Translation" ("Problems of studying the translation of children's literature" [1], which is devoted to issues of concern when studying the translation of children's literature. This work addresses issues such as missionary the role of translation of children's literature, the theoretical basis of translation, the invisibility of the translator, low status, profile, translatability and untranslatability, ideology, censorship and many other issues related to the problems of translation.

The author of this study states the following, "The directions of research emerging as a result of globalization, as well as new trends in research on translation strategies, will have an impact on the research structure of the translation of children's literature. Turning translation strategies towards new technologies, process research, and new methodologies that can effectively support research into translators' strategies and norms, behaviors, decision-making, and emotions during translation can lead to challenging research directions and shed some light on aspects of fiction (HL) that have not yet been explored.

It should be noted that the epicenter of this scientific work is precisely the child reader and the problems of translation studies precisely from the point of view of this object, which has a different perception of the world around it, specifically different from the adult reader. The materials of this study represent a complex of original resources for the methodological base of new research in the field of translation of children's literature.

The next dissertation of the Arab researcher V. Dukmak [2] touches upon the problems of the cultural aspect in the translation of children's literature into Arabic. In this work, there are such categories as: cultural references, names and wordplays in the translation of children's literature into Arabic. Based on the analysis of three books from the famous Harry Potter series by the English writer J.K. Rowling's "Harry Potter and the Philosopher's Stone", "Harry Potter and the Goblet of Fire", "Harry Potter and the Half-Blood Prince" and their Arabic translations, the author examines idiosyncratic aspects of the fantasy novel subgenre intended for teen readers.

The author considers children's literature in the Arab world, which occupies a peripheral position in the Arab literary polysystem, as the object of research. According to the author, if we turn to the heritage of Arabic literature, we can clearly see that it was mainly created by men and for them. Arab society was, and to some extent still is, very patriarchal.

Analysis of Subject Matters

The author of this work came to the following conclusions about the norms of translation for children in the Arab world in books about Harry Potter:

"The apparent lack of oversight of the Harry Potter translation project from Russian to Arabic, despite considerable effort in manual analysis, there are always limitations and reference calculations cannot claim full accuracy due to the sheer size of the books being analyzed, as well as that the analysis does not use any electronic auxiliary tools. The use of a machine aid would help, however, to ensure accuracy in the frequency of a single reference throughout the book, and hence consistency in its treatment of a given reference in translation.

In our opinion, the work that deserves attention belongs to Z. Hussein, whose title is as follows: "Strategies and Motivations in Translated Children's Literature: Defoe's Robinson Crusoe as a Case Study" [3]. The work considers the problems of translating children's literature in general and translations of Defoe's "Robinson Crusoe" in particular, also mistranslations and possible violations caused by cultural and ideological differences between Arab and foreign cultures play a special role in this study. Due to this, the problems of translation are divided into the following: ideological and cultural. The study explored the various strategies that translators have learned when dealing with these issues. The author shows what the translators tried to do to fill the gap that may result from a literal translation.

Moreover, the author emphasizes in the work "The translation of children's literature into Arabic, like adult literature, poses not only linguistic, but also cultural problems regarding cultural references, foreign names and customs, and other cultural, social and ideological aspects, since Arabic and English cultures really different. For translators, this is even more difficult because children cannot be expected to accept or understand certain aspects of English culture. Since children are likely to be influenced by what they read, translators must be able to translate foreign elements in a way that does not shock the Arab child reader with harmful aspects such as ideas of violence, racism and ethnicity, and the use of taboos."

In general, the analysis of the work is very original and informative, but at the same time there are some shortcomings: since the work deals with the problems of translating the book "Robinson Crusoe" by Defoe, which is no longer intended for children's literature, but most likely for adults or in extreme case for adolescents.

The work of another Arab researcher A. Chelalga "Investigating Difficulties in Translating Cultural References in Children's Literature. Case study: J. M. Barrie's Peter Pan [4] examines children's literature and its translation with a greater focus on the processing of cultural references. It aims to present the various approaches and procedures used in translating cultural references and thus highlight the difficulties that hinder their processing. This was achieved by analyzing J.M. Barry's book "Peter Pan" published in 1995 and its translation into Arabic, which was made by Kawser Mahmud, published in Egypt by 'Hindawi in 2013.

Research Methodology

In his study, the author comes to the following conclusion:

1. the specificity of each culture and its unique way of perceiving various aspects of life reduces the possibility of conveying a complete message

2. Links with multiple associations create a complication that is difficult to handle.

3. The dissimilarity in the age and understanding of the foster child makes it difficult to decide on the appropriate procedure.

4. The child's background and prior knowledge of the source language and culture, which is for the most part limited, makes it difficult for the interpreter to grasp the approximate meaning.

The rather sufficient amount of work and the extensive material involved in it proves that this work is unique in its kind. In addition, it can be argued that the results of this work are invaluable material in the study of the problems of translating children's literature from English into Arabic, it is this important detail that almost corresponds to the translated language of our choice, since Uzbek and Arabic cultures are related, due to one religion and a similar cultural outlook.

In the next study, conducted by Charlotte Berry, "Publishing, translation, archives" (Nordic children's literature in the United Kingdom, 1950-2000) [5] is also of great interest to researchers of the problems of translation of children's fiction.

This dissertation takes an interdisciplinary approach, drawing primarily on archival and bibliographic research, as well as the fields of children's literature, book history and translation, to examine British translations of Scandinavian children's literature since the 1950s.

The author of this study uniquely combines the linguistic knowledge of the Scandinavian languages with the professional training of an archivist and informer, which allows him to use an unusual methodological approach that combines a detailed bibliographic study with the complex use of archival primary sources related to major British publishing houses.

This study included the history of Scandinavian children's literature in the UK. First, the boundaries of the corpus of translated Nordic children's literature in the British context were broadly defined as a result of a comprehensive review. Secondly, the issues of choosing the text and the author have been resolved. Along with a third and final focus on editorial and translation leading publishers, both last lines of research are considered, which were explored through extensive use of oral interviews and consultations with accessible and up-to-date publishing collections.

Since this research work includes three academic disciplines: the history of the book and publishing, translation and children's literature, it responds to the trends of new fields, moreover, it relevant theoretical concepts from translation studies are used. Despite the above, the study does not specifically address the problem of translation, but only pays attention to the theoretical framework based on the results of the practice of other researchers.

Another notable work is Thomson-Wohlgemuth's Children's Literature and its Translation. An Overview" [6], which includes a theoretical framework that focuses on distinguishing the concept of children's literature from the concept of literature written for adults, and depicts the four main actors in the translation process, i.e. author, translator, publisher and critic. Differences between cultures and their consequences are also identified, as well as, in this regard, methods of adaptation. The section on specific translation issues deals with issues such as the translation of names, language, and the role of illustrations.

The paper attempts to discern the processes taking place with children's literature and its translation, analyze them and subsequently identify the main influences of force.

Although the main aim of the dissertation was to cover as many aspects of children's literature and its translations as possible, to give a general idea of the subject and to provide a useful reference work, in the opinion of the author it is impossible to include all aspects of the subject, since the wide variety of factors, elements and views it is beyond the scope of a work of this magnitude. It would seem that the main question in the genre is "What makes a translation of a children's book "good"?"

For the reasons given in this dissertation, this question is difficult, if not impossible, to answer due to the many conflicting influences and opinions.

This paper also shows that too many changes of this kind are considered unnecessary and even undesirable. Such changes are seen as manipulating the child, who himself is too inexperienced to understand what has been done. Many scholars regard these "change procedures" as negative and regard texts with such unnecessary modifications as second-rate. They argue that it is not right for children to learn about other cultures and their special customs. They acknowledge that this is problematic, since the main goal of translating children's books is to make literature accessible throughout the world, and thereby promote international understanding and empathy among people.

It is precisely the problems of discrepancy between the age and culture of the reader of translated texts that are combined into one expedient system, which adds a huge privilege to this work, the only drawback of which is that the variety of factors, elements and views goes beyond the work of such a volume.

Study of the problems of translation of children's literature on the material of the Uzbek language.

The problems of translating children's literature on the material of the Uzbek language have not been studied quite often, despite this, we have analyzed several of those that deserve worthy attention.

One of these works is the dissertation of M.K. It deals with the issue of observing a poetic text and recreating it in another language, which has long attracted the attention of practitioners and theorists of translation, and different, sometimes completely contradictory, scientific views are expressed on this issue.

In this work, for the first time, general and specific aspects of poetic translation from English and American literature into Uzbek, the possibilities of bringing the translated text closer to the original, achievements and shortcomings in this area, as well as their causes were studied.

Moreover, the current study analyzes the Uzbek translations of Henry Longfellow, Robert Burns, Langston Hughes, compares new direct and previous direct translations of William Shakespeare, George Byron, reconstructs the heroic nature of ideas and objective content.

In conclusion of the scientific research, such important points as the uniqueness of the chosen topic can be noted, which gives the work an even greater status in the world of scientific research. It touches upon those problems of translation that are an integral part of comparative, contrastive linguistics. It was this feature that served as a reason to be among the first dissertations written in the Uzbek language, in which

two unrelated languages are compared, that is, belonging to different language families, such as English and Uzbek. Moreover, this dissertation deals with the problems of translating not only prose, but also poetry, which will serve as a theoretical basis for our study, since in the following chapters we will analyze translations of poems in the works of Roald Dahl.

Another work that deserves special attention is the study by G. A. Ostonova, on the topic: ""Ming bir kecha" asari uzbekcha tarzhimalarining qiyosiy tadqiqi (davr, services of tarjima anigli muammolari)". In it, for the first time, the Uzbek translations of the work "1000 and One Nights" were analyzed as part of a comprehensive study that revealed the specifics of each translation.

The literary value of the Persian source underlying the translations of Sidikiy Khondalikia, Ahror Mahmud and their artistic ideas was studied. The achievements and shortcomings of each translator, the chosen path, the level of skill are revealed, on this basis the principles of freedom and creativity in the history of translation, literalism are determined and the reasons are explained.

In the course of the study, various translations of this work were analyzed, in which translators tried to convey the artistic means and charm of the work in their own way, but in general it was found that the following is necessary: 1) to receive visual means accurately, without changes; 2) apply new alternatives; 3) reduce where necessary; 4) use additional visual aids; 5) add artistic colors.

In addition, translations of "1000 and One Nights" from 1959 to 1966 were examined in the dissertation, their original copy and the Persian translation were intended for comparison.

Having analyzed the above, it can be noted with confidence that this scientific dissertation includes a fairly sufficient amount of information and the extensive material involved in it proves that this work is unsurpassed in its kind and can serve as a methodological basis for our dissertation research. Only the lack of analysis of translations of a work in English is an unimportant, but still noticeable feature, due to the fact that our dissertation research is devoted to the problems of translation from English into Russian and Uzbek.

Analysis and results

M. A. Kholmatova's research on the topic "Problems of artificial translation of classical lyrics into English and Russian languages" is close, in fact, to our dissertation work. It analyzes the world of the ancient first Turkish written monuments and their place in literature.

The source of the study was the works of Yusuf Khas Hajib "Kutadgu Bilig" and "Devoni Lug'at-it Turk" by Mahmud Kashgari.

In conclusion, it should be noted that classical lyric works and their comprehensive study of interpretations are expanding.

Diverse is only the field of translation of poetry in this area, which can open up a wide range of possibilities for interpretation. Language in the translation of poetic art and, in addition to the problems that are explained by the specifics of cultures, each of the internal capabilities of the language, experience and skills of translators, these are qualities that stem from their personal qualities, their worldview does not play a secondary role. Literary media from one language to another literary translation requires great aesthetic skill from the translator.

Based on the foregoing, we can conclude that "Devoni lugat-it Turk" and "Kutadgu bilig" are world works that are studied by the public in various fields of science and translated into many languages during the period of world civilization and transformation. Foreign translations of these works provide a stable link between the Uzbek people and the world scientific community. The uniqueness of this study lies precisely in this, and to surpass its predecessors working in this industry. In addition, these works are of great importance for Uzbek translation studies.

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Issue Article

Zebo Uralovna Berdieva
TerSU
an independent researcher
at the «Uzbek Literature» department
zeboberdiyeva30@gmail.com

TRADITIONAL AND INDIVIDUAL METAPHORS

Abstract: *In the article, the figurative method, which is the most widely used in poetry, is sometimes the main principle of the art of words and one of the types of artistic transfer, the role and manifestations of metaphor in poetry, the artist who has four unique styles of aesthetic functionality: Rauf Parfi, Nadira Afokova, Halima Ahmedova and Askar Mahkam. it is in this way that it is studied in the example of its views and ideas.Imagery is the life and soul of a true work of art. Thanks to the metaphor, the artistic text becomes layered. Everyone opens these floors as much as his mind, thinking, knowledge allows. It is studied on the example of poetry created in the environment.*

Key words: *metaphor, metaphor, rhetoric, maqlubi mustavi, muvassal, tarofuq, mazhabi kalami, radif, weight, rhyme, tashbeh, diagnosis, epithet.*

Language: *English*

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Introduction

The requirements and criteria for speech art are different in each period. Rhetoric was fully formed already in the fifth century BC, at that time artistic creation was focused not only on the basis of laws, but also on the scope of internal laws: emotional coloring, aesthetic, intellectual influence. It can be said that the poetic perception of the world was formed at the same time as humanity began to understand the world, tried to understand it, and developed a strong interest in learning about natural phenomena. By nature, a person compares everything in existence, divides it into good-bad, necessary-unnecessary, necessary-necessary, and chooses what suits his taste. As the thinking process deepens, the nature and needs of man also change, he moves away from anything that does not satisfy him. This departure is a practical expression of the conclusions drawn from his comparison. Attunement is actually a semi-unconscious process, a reality of the uncontrollable spiritual world of a person. It can be said that metaphor has the character of individuality and it is one of the unique manifestations of human thinking. Just as life cannot be imagined and understood without metaphors, and one thing cannot be determined better than another, fiction cannot live without metaphors either. If the metaphor is removed from the poem, it becomes a simple, dry message. The metaphor that gives the word mystery, impressiveness, emotionality knows no bounds. "The fact that Petrarch listed about four hundred metaphors at the writer's disposal to express the "unfaithful world" also confirms our opinion." **{11-p}**

Askar Mahkam is the most complicated person in the history of mankind, who at first glance is moving forward very quickly on the path of human happiness, constantly beating himself on all four sides to achieve more things, closing everything in his own way, understanding, but in reality he is increasingly moving away from himself, into his own soul. He is one of the poets of the last quarter of the 20th century, who is used to betrayal, conspiracy, betrayal, lies, malice, hatred, disintegrating the standards of faith, value, morality and drowning in the mire of mass culture. As a poet in whose imagination and thinking faith and honesty, enlightenment and freedom, faith and religion floated like an ocean, he revealed the vices of his time that were overlooked by other poets. In R. Parfi's poem "Nomardlik" one can see the uniqueness of the individual style. A person endures

many hardships. He endures even if sometimes sorrow falls from the sky; if the water, tea, or wine he drinks suddenly turns into poison, he will be patient even if I put an unexpected "cloud" on him - grief; If the swallows fly to the ground to warn of the danger, nature and the birds will endure even if they give signs and warnings of the inevitable disaster and visions; even if the world is suddenly hit by a hurricane, flood, calamity, he endures, looks for a solution, and finds salvation. Even if the sun does not rise for a week or a month, a dark cloud covers his face - an unexpected disaster - the servant is patient. It's hard for a person to bear the betrayal of a friend, the fact that he was deceived and the victim of his trust.

The sky is above my head,
Clouds fall on my tea,
Swallows hit the ground,
The trees burn, the sun fades,
Are you sad to leave me, my friend?

If you pay attention, there is only one reason for all tragedies - betrayal of a friend, cowardice, lack of words, inconsistency, even the sky has fallen, the burden of the world, grief has fallen on the person who is alone. Therefore, "the sky is above my head"; that's why a cloud landed on the cup of tea he was drinking. (Due to the sky falling on the head, the swallow (goodness, the ambassadors of spring) is also forced to fly away. This is the tragic result of a friend's betrayal and neglect! he explains how much he is in a difficult situation as a result of this betrayal by successively using metaphors such as "swallows hit the ground, trees grow, the sun fades". If the feeling of sadness and pain is excessive, then the combination of hitting one's heart on the ground, which the poet uses in this place, adds sadness and pain to the pain. The verbs "fade" indicate permanence, not continuous action, but are limited in terms of time, complete, live an means calamity. Only by examining each word in Rauf Parfi's poetry, one can develop some of his philosophical world. Because the poet lived every word, every line in these poems and paid for these feelings with his life. Only such poets can have the happiness of turning the "places occupied by the space of words" into their own property and kingdom. Rauf Parfi is our true poet who has risen to this high status.

Analysis of Subject Matters

The bird of my soul sings a mysterious song,
The sky is like an eternal cloud.
It's a dream of those moments spent with you
It calls out with glitter, signs all the time.

The moments spent with the lover are as if forever engrained in the world, the soul, the secret song of the lover's soul, his love turned into a bird, it is impossible to forget it, to give it up. Note the poetics of this stanza: Mysterious song (epithet), bird of my soul (metaphor), like a navo (metaphor), dream of moments (metaphor), glittering calls (adjective, inflectional form of revitalization), hints always (diagnosis). The likeness of the sky to a dream is an unexpected phenomenon in poetry, a dream that has become a relic of the eternal navo-samo-visal moment, this memory constantly attracts the lover. The poet translates the pain of not being able to forget very beautifully in the language of nature.

I'll blow your mind with a kiss,
My tears are the strange gardens of my memory.
I searched for you in my dreams,
Those times that cannot be returned.

Look at the classic image, simile: "Kissing your mind bleeds my pain" means that every breath, every moment of the lover's pain gets worse, the wound bleeds, and it shakes bitterly. After the farewell song was sung, the soul with blood "Cries are the strange gardens of my memory," says the poet. So, after the farewell, the gardens became strange and desolate. No matter how sad and gloomy the poem is, it is extremely charming. Kissing your imagination (diagnosis) my pain (diagnosis, allusion), Crying is the strange garden of my memory (metaphor, epithet, revitalization), I searched for it in my dreams (intoq, metaphor). The whole poem consists of a series of arts

Years have blown my spring, distracted,
The grass moved my summer to the ice.
I was looking for a special place in the environment
I see my Star, my Sun...
You are the star, you are the sun, you are my motherland...
I broke my unbreakable promise for you.

"Spring of years" (metaphor) - the freedom and prosperity of the nation and country; "He blew me away" (a metaphor is also a diagnosis) - he blew my peaceful, peaceful, happy life to pieces; "Grassy summer" (epithet) Motherland, a nation full of youth and power; "Moved to the ice" (metaphor, metonymy) - to suddenly invade, find, oppress, turn spring and summer (nation, Turkestan) into bitter winter, ice, and dungeon. "The grass moved my summer to the ice" (oxymoron - strengthening the meaning by using opposite concepts side by side). "Float like a khas" (allegory, revitalization)

Believe in my soul, give life to my soul,
Mix my mud, cleanse me,
Give pure blood to my weak veins,
Clarify my darkness, make me white.
Make me aware of the knowledge of the Hereafter
Do not extinguish the candle of my beloved, God.

In the metaphor "mix the clay" there is a hidden reference to historical events and the beginning of man. Literary scholar Maftuna Kholova wrote a special article about this sonnet and interpreted the idea and philosophy of the poem through the analysis of metaphorical images. Professor K. Yoldoshev says, "The main metaphor becomes the object of metaphorization of one or more derivative metaphors

of secondary level, which are going in different directions at that moment. It is absolutely impossible for all the elements of the complex whole to gain importance, and the impression of irrationality of the device rises to its peak." When God made his body out of clay to create a man, the angels told Haqq that if you create a man, he will commit many sins and misdeeds... But because man knows the name of the total existence in the universe (name of the great) is Allah. He created man and gave him mind, language and thinking. Then the blood of the devil mixed in his blood. That's why the poet says "purify me", "give pure blood to my weak veins". This is the evil deeds of the children of man on earth, oppression, corruption, and grievances. "Make my life clear" means make my life bright, my sustenance honest, complete. "Give life to my body" - do not make me a dry body, a bag of meat, give life - spirit, Biru Bor give your breath; "Don't put out the candle of my beloved" - don't turn away from your heaven and mercy.**{35-p}**

Research Methodology

Rauf Parfi has a high faith and a way of life. The tenth season begins with the poem "Passenger", which consists of three sonnets written in 2001, and a line from Abdulhamid Cholpan is quoted: "I wove a golden cage from my imagination". This grassy verse of Cholpon was also written as a courage as an opponent of the existing system of his time.

My soul warmed in the bonfire of words,
He is a star, I read the words of the moon.
My lips are cracked, my teeth are broken,
I made a golden cage out of my mind.

"The bonfire of the word" - heartbreaks against arbitrariness, grassy pain, hatred, pains; "My soul is warm" - even if he cannot say it, even if he cannot lose the tyranny in his head, he is thankful that he has a feeling of rebellion in his heart. "Ul star, moons" - Mother Turkestan, the past, the nation. "My lips are cracked" - not being able to say the words of freedom and freedom, crying and swallowing all the pain; "My teeth were broken" - tortures and pressures during the time of tyranny. "Golden cage" - Shura system. Metaphors such as bonfire, warmed my soul, word of the months, poured out of my mind, When we look at the Uzbek poetry of the 20th century, we can witness that the structural features of metaphorical images are close to the traditions of our classical poetry and that they have been developed. Today's modern poetry is undoubtedly a continuation of our classical literature. The famous literary critic N. Karimov says about this period: "The most beautiful examples of Uzbek classical poetry are full of wonderful poetic findings, deeply meaningful images, allusions, and musical melodies. In the 20s of the 20th century, when the classical aruz was transferred to the modern finger, this color was not directed to the poetry of the Shura period as a sign of "lyrics of the feudal era". **{17-p}**

Cholpon skilfully used some poetic elements that provide this color in his poems filled with pure lyrical feeling. Continuing the tradition of Oybek Cholpon, he turned metaphor into an important tool that defines the colorfulness of his lyrics. Several years later, after the flames of the struggle against "pure lyrics" subsided, first Erkin Vahidov and Abdulla Oripov, then Rauf Parfi, Shavkat Rahmon and Usman Azimlar's generation widely referred to image methods and tools that help to refine the expression of thoughts and feelings in Uzbek poetry. As a result of Rauf Parfi and Usman Azim's research in this regard, the artistic function of metaphor in Uzbek poetry has increased tremendously. Imagery in the poet's poetry. The metaphorization of a number of traditional images in our classical verse shows its different aspects in his work.

Analysis and results

Reading the title "Lost Soul" raises doubts in the heart: is the soul also lost? What did the poet mean by this? Ruh - soul, that is, breath is originally from God. When God first created man, he gave him a "puff" - breath and soul (soul). But what exactly it is is beyond the power of the mind. It is clear that the soul of mankind is connected with the Truth - the soul of the universe, it created a soul (soul) and returns to itself. Here a natural question arises: all? Mankind has been given two paths: guidance and misguidance. One is heavenly, the other is hellish, the world of Rauf Parfi 563 what about those who went astray - are they evil?! What exists in the world is separate from itself and has its opposite: love - hate, mercy - anger, kindness - pain, satisfaction - desire, patience - haste, gratitude - ungratefulness, good - bad, heaven - hell, good - evil. So, how did the four elements come together in the human body when they were in conflict with each other: earth, grass, water, air?! Maybe that's why some element prevails in human nature? However, it goes inside a person from birth to the last breath. So, how does the poet-philosopher Rauf Parfi look for an answer to the problem of the lost soul? The fact that the poem was written in the year of independence makes us very alert - 1991! 1. The rain of the sun is black, the stars are ice. This river is a long wound, The trees are bent, bent. Horror, scary and cold scene, "yogdu" - "black", "stars" (light, light, hope) "is ice" "this river" - life (world, aliveness) "stretching wound" - serious pain that is difficult to fix, disease "trees bent, bent" - this is the plight of people.

The stars are icicles shed,
Mists are hard as stones.
Thorns are planted in the land,
Planted lies, suspicions.

The goal is the target, the scene has begun to unfold. This is the disintegration of the former union in the 90s of the 20th century, the convulsion of the empire, the disintegration of the stone of repressive ideology, the investigation when the "planted thorns"

are stepped on, the persecution, prohibition, imprisonment, and fears. "Sown lies, suspicions" - the authoritarian nature of the Shura, "ideology of envy**".{ 43-p}**

Characteristic of artistic metaphors is initially defined by originality and individuality, so that these features are among the aspects that show the rhetorical function of artistic metaphor.

In conclusion, in the poetry of the representatives of the new era poetry R.Parfi, A.Mahkam, N.Afokova, H.Ahmedova, the metaphoricalization of classic traditional images is considered important in defining the individuality of the poet's style along with artistic-aesthetic impressiveness.

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Issue Article

Sakhiba Jalmuradovna Saidmuradova
Termiz State Pedagogical Institute
Teacher
ns123321ns.com@gmail.com

THE STORY OF ARTISTIC PSYCHOLOGY IN THE WORKS OF NAZAR ESHONKUL

Abstract: *In the article, the writer nazar Eshonkul notes that in his works it is possible to observe the events of artistic psychology, the peculiarity of psychological image, the artistic skills of the creator and the uniqueness of emotional speech.*

Key words: *artistic skill, psychological image,aesthetic vision, mental senses,spiritual scientist, mind flow.*
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Introduction

The more spiritually rich the writer himself, the more he is a scholar of human qualities, the more he is acquainted with the landscape of the spiritual world, the more profound his imagination is about them, the more educated, vital and truthful his creations turn out to be. In Uzbek literature, the work on scientific-theoretical study and generalization of the psychological image is not particularly extensive. Long time ago, the aspiring literary scientist Narzulla Shodiev "A. He defended the candidate's work on the topic" psychological skill in the work of kahhor "and on this basis published articles, the booklet"artist of the spirit"(Publishing House"Science", 1977 - th year). An important aspect of this system is that the issues of psychological image, the aspects of the writer's skill in psychology in this regard, have been studied as a component in studies devoted to well-known writers. Truly, psychologism is the human phenomenon, the most important tool in the system of determining the author's artistry and is considered a source of rich material. There is a person, his dream, imagination, joy, grief, hard-working moments, aspirations will sympathize with him and cooperate with him. These spiritual and spiritual processes live and develop in the dyslexia of the soul, in the spiritual world. Such components within the framework of the holistic system of psychology in the artistic literature are considered to be factors determining the degree of mastery of the writer's style. In Uzbek literature, including in prose, it is self-evident that the genesis of artistic psychology is a large-scale issue. Since the object of artistic literature, samples of oral creativity of the people are human, they also serve as the basis for the imagination and study of psychological states **{24 p}.**

Analysis of Subject Matters

Nazar Eshonkul emphasizes in his theoretical works that literature, important human and divine qualities of creativity, literature and creativity are the work of the spirit, the spiritual issue. For example, he notes in his article" creativity and I", the first Talab of literature- "literature has always been on the side of goodness and has defended goodness, the spirit has begun to be on the side of goodness", and tries to describe in more detail the views of this issue, that is, creativity, literature is primarily a product of the divine and spiritual:

The dictionary composition of the language of the leading images in the works is enormously indivudualized. Individualization is carried out by a number of means of speech characteristic, which, in addition to the content of the speech of the heroes, gives a deep psychological tasvirini of the characters – tone, tepm, pause, intonation. Therefore, even to the

speech of the protagonists and only their specific psychological characteristics, at the same time, the state of the soul at the same time, their mood, also becomes expressive. In N. Eshonkul's writing career, in his psychological skill, the heroes have a leading character in the system of interpretations of "heart dialectics", prints of the use of internal spiritual monologues, types of speech characteristics. Even then, he uses the method of sound intonation of images, the tone of which all the time performs a psychological task. Because subtle, subconscious deviations in sound, ottencas also reflect the deepest spiritual changes in the inner world of the hero. The artist in the story "the man who led the monkey"can also be observed during the suffering of the old man:" the income decreased, the demand for charity increased, the Tier people remembered the previous head with regret, they realized that he chose the right path. Well, tell me, here's what's good, what's bad. Lasa how to do it is different. One thought of the people and abused the law, the other thought of the law and devastated the people. I can not distinguish here which one is evil, which one is good, no. I could not even notice it in my lifetime" **{11 p}.**

The content of such a more sad characteristic of the old man in the victim will help to understand the Black affairs of the past as deeply as possible.

Research Methodology

Through the eyes of the writer's valiant young man, the words of the old man, in his depressed state of affairs, with the help of his own characteristic, too, look into the world of this sad fate:"he stopped grumbling with alam. It was clear that he was angry, how disappointed, now, to say anything, jerking. He did not like those who did not approve of his opinion, apparently. All his life I dreamed that he was looking for what good is, what evil is, he could not find the answer, and I was horrified, even as I understood by the andak to his pictures, which he did not understand on that day; this suratlar-the thoughts about the life of a person who did not believe in himself, spent his life in vain with various scams and comforts, were fragments of his abstract obscene soul. As his life came to an end, he ran away from the gloomy conclusions of the world, hiding in the dark forest of such calm and loneliness. He wanted to look at his past life standing in the bosom of this loneliness, to draw conclusions on his own life, somehow, from what he said, this sensation, but I think he still did not find the necessary conclusion for himself. His lonely life seemed to me terrible as the loneliness of a rotten tree." **{45 p}**

Deceivers are ravaged before our eyes as a misguided typical representative of the people who are inherent in the old man-made system, which comes to self-satisfaction with comforters. The narrator tells the young man that the suffering of the monand's life on the rotten tree of old man is another vivid reflection of the oppression of an unfair society.

Such literary rakurs are observed in the activities of several more talented writers such as Nazar Eshonkul, Khurshid Dostmukhammad, Isajan Sultan, Ulugbek Hamdam of the independence period.

3) psychological portrait

In portrait works, which are one of the important tools of psychological analysis, heroes play a huge role in the discovery and discovery of "heart dialectics". In the artistic work, the concept of portrait can not be limited to the appearance of only one image. The true master of words always seeks to enter the spiritual-spiritual world of the heroes through his appearance. Therefore, the concept of "portrait" refers to two meanings : the image of the external image (in a narrow sense) and the whole individual – psychological image of the hero (in a broad sense).

A number of writers, for example, Balzac, Turgenev, Tolstoy, Dostoevsky, Mopassan,driver, Tagor, A.Kadiriy, Oybek, A.With the introduction of the image into the literary style of kahhor into the work, he first shows a picture of literature - an artistic portrait. For example, the patronymic ("past days"): quot;...heavy-natured, majestic, exaggerated and white-faced, handsome black-eyed, proportionate black eyebrows" - it turns out that the perfect personality of the scallops, with this appearance, is the owner of an immaculate soul, and his expression is psychological the condition is manifested. In the portrait image, the hero is also a psychological means of expressing such states as joyful, sincere, weary, sad, crushed, etc.of the spiritual world. Here is a portrait of silver("past days") in a spiritually depressed state: quot; from the Middle door appeared a silversmith. Burungi fullness went away, lost weight, and but this weight did not give the Husna a minus, and the forearm was raised. The eyes of the Shahlo fallen a little bit bota, showing itself by striking the mavj over the eyebrows of the bow were also Tim blackness of the tag, the tag'in had also earned lullness... it seemed that there was a drawback in it: the Shahlo did not keep the eyes playing like a nose, and then was characterized by a weight on the edge."

The image of this portrait is a somewhat depressing state of Kumush in his Pallas, which is sad from the state of kundashlik. Among the Masters of World Literature in Uzbek prose was the writer Abdulla Qadiri, who managed to create the first examples of this kind of portrait art.

Matyakub Matjon writes: "the psychological states of Otabek are different ways, comparing with the fate of other individuals with remote means (the story of the master scientist), if the melody is depicted with musical instruments, the psychological states of Kumush are reflected in it in direct ways by drawing portrait changes in it"

In the creativity of Nazar Eshonkul Turgenev, Tolstoy, draws attention with its skill edges,

reminiscent of the style of the Almighty literature. He emphasizes the wide interpretation of the anti-Semitic poles of the spiritual world in describing the form-Shamail of his heroes. In the story" coffin", the man who embodied the totalitarian regime dictionaries, the essence of the tyrannical policy, from this vision of the architect who drew the history of the city, shows in the image of his portrait the deplorable state, which remained devona: after the inspector said "your colleague", I put a more correct magnifying glass on the psyche: almost the left over, only the music being heard from the distant or the city being destroyed, harir doğkabi, who was waving in gratitude and tenderness to the devastation between the city being destroyed, had remained in his delicacy even after a whirlwind of junbush and a fantastic bunny, whose hands had blushed at the dawn of the sun, whose eyes had sunkered, reminiscent of those lay in pieces like this: the one-sided flame that could not illuminate the darkness of the past is newthis face, they were silent, unable to shine this body" **{50 p}.**

The architect of the city, who was originally very healthy and cheerful, had no money or abrasion left on his side, only a pora copy of the map of the city, which once made his own tarragon, was left behind, as if he were in a churchyard, where the smell of hummingbirds from the Houses of the City restored by him had become The characteristic signs in the perfect psychological portrait reflected the ugly depraved circumstances of his ruin from the city: hanging; an end to a man-made period in the bosom of" irony", an evil policy-boundless hatred, flame, traces of suffering...

The thoroughness of the literary skill was fully manifested in the fact that through the portrait of one mad architect a whole long stretch of evil politics was able to give horror. In this way, the writer Devona gives a fair assessment to the tragedy that has become a means of death, such as an unbearable smell, an unbearable mess, a rotten swamp, even to the homeland, the harbor, to the homes in which anashu lives, among others, the "crazy irony" of someone who has turned to the madness of inhuman politics. This Is N.How skillfully eshonkul was able to use the psychological essence of the artistic portrait, which gave him the basis for achieving creative sophistication.

Nazar Eshonkul is the leader of the national spirit in his works, although he knew quite well the achievements of world literature, European realistic prose and mastered them creatively. The reason why literature can not destroy any black power or Cataclysm is because of its strong reliance on national ground.

In the scientific research on the work of Nazar Eshonkul, he gives an emphasis on the issue of his reliance on the spirit of the currents of European literature, culture. Of course, there is a soul in these views. However, the most important aspect of the issue is that nazar Eshonkul, as a strong creator of the national – spiritual phenomenon, is only in relation to the advanced experiences of such world literature, first of all from the point of view of its national background and national values. For example, the story of ADIB "can not catch the wind" such a national charm is one of the thoughtful works. As soon as the work is shown, it will be known that it will be in harmony with the national value, the National ground. The scope of the plot of the story, the peculiarity of the composition, is associated with the village of Tersota, one of the ancient Nasaf villages where the writer was born and grew up.

The charm of psychological analysis will be directly related to the fact that it is based on a thorough and reliable balance of life realities. In fact, the true essence of perfect psychological images acquires vitality with the help of its manifestation in natural harmony with such literary components as dramatic and tragic images, lyrical – aesthetic scale, figurative **{5 p}.**

The story "can not catch the wind" carries a figurative essence of art, according to the universal in its naming. Why can not you catch the wind? Not seeing the wind, not being caught is the real life reality. The writer subordinated this natural phenomenon to the goal of poetic expression of the ideological – philosophical essence of the work in a figurative – symbolic way. The phenomenon of non-capture of the wind parallelically represents the essence of invading, dishonest, murderous phenomena, the sudden imposition of the scale of their occurrence and the inability to evaluate.

One of the great socio - spiritual tasks of literature and the main thing is an expression from glorification, protection of the national characteristics of which each creator belongs. Nazar Eshankul's products of creativity the most urgent issue that attracts attention in the center will be the fate of the national character and his servants, who lived tragically during the Shura period, in an atmosphere of domination of evil. Therefore, it is not surprising that in the works devoted to the study of nazar Eshonkul's works, the national image is the main focus of fate.

Adib learned that national servitude, the tragedy of the nation is the tragedy of the individual. National degradation is expressed in stages, through an artistic psychological analysis of the changes in the character of the hero (he) of the "invasion" **{86 p}.**

In the stories are created Real historical images, historical stories, Real historical – national characters. If only two images "Ghanim and Hero" were involved in the story of Nazar Eshonkul's "invasion", X.Do in the work of stmuhammad there are a number of images of colonized nationalities and colonialists. In this way, many facets of the national character are opened. The hero of both works also walks under persecution {4}.

The fact that national heroes walked under absolute persecution in the era of Shura, expressed in the light of an important literary formula, thoughtful figurative psychological skill, marks an important core of the creativity of such bold aspiring nationalist writers.

Because of such literary realities and thoughtful artistic research, the works of such courageous writers are also published in developed foreign countries. Nazar Eshonkul, in his interview with the Korean professor inongong Ox on the topical issues of today's literature, is mainly passionate about the nationality of literature:

"My main goal is to show the literary landscapes of the spirit and soul of the Uzbek nation. Today's Uzbek (including Korean), on the one hand, as the most advanced representative of Bugun, is enjoying the latest achievements of civilization in the very center of development, just like a Western person, and is standing in the ranks of its creators. On the second hand, unlike a Western person, he is also not completely disconnected from his age-old traditions and values. In theory, technical progress doubts the survival of national values, but on the contrary, concrete aggression against it. Such aggression takes a person away from his soul, which binds him more to the idea of serving him or her than human qualities and feelings, or a sense of duty and responsibility to the system. This homogeneous duty and responsibility does not leave a need for values in a person, which makes it unsuitable. The relationship that has become a value with techno Aham relationship of importance comes into conflict. From now on, signs of this collision are visible. As a result, the natural state of man, that is, between the soul and the progress, is ixtilof arising. This ixtilof has already begun. The West described this conflict in the image of Terminators, navigators. In any case, the literature of the future to struggle for the pure preservation of the soul of Man, the image of ma Sattorova G.No, it's not. Showing avtoreferat **{8 p}.** Will be built, during. Progress must pass through the prism of the human soul and the spirit of the nation, absorb into its own being without being and begin to advance mankind, not denying humanity. This is what humanistic ideas, humanistic literature, which have passed so far, say. Both Uzbek and Korean humanism emphasize this. Eastern wisdom is a humanistic wisdom, motivated by the preservation of the soul of man. The preservation of a person's soul is the main task and duty of today's literature. It is then that spiritual tragedies do not occur today that condemn the Western man to loneliness and godlessness". Literature is a struggle for the human soul.

Analysis and results

Nazar Eshonkul's formation as a writer is directly related to one of the secrets of improving his artistic skills – the degree of mastery in his psychological style.

In the works of the writer, in his artistic research, dramatic and tragicistic images interpretation can be used productively to describe tragic destinies, injustice, oppression, violence, the consequences of occupation, the life of slaves who have not seen the crushed fasting of Emir destinies. Dramatic and tragical images attract attention mainly as a means of portraying the fate of the national forces, those who were victims of tyranny, tyranny, aggression in the Shura period. It should be noted that the artist, created with the creative magic pen of nazar Eshonkul, the old man (the man who led the monkey) mute, built the coffin city and from this the architect (the coffin), who was devona, the young scientific worker (the city of kharoba)who wanted to restore this native land, which had been destroyed under the centuries-old oppression of N, who sacrificed his abusive attitude to persecution. In the interpretation of dramatic and tragicistic images in the literature of a number of more artistic harmonious emblems, such as the novel (gurgli), we can see that Eshonkul has created or contributed to such types of psychological images as suffering, oppression, suffering, persecution, mutelicity, intimidation, etc. Jays, A.Kemyo, M.Prost, G.Markes, F.Kafka, A.Salcenesin, I.It becomes known that the world in the style of modern and Postmodern literature, like brodeksky, is going on a creative attitude to the tradition of creative people. And it can be said that the look in this direction demonstrates that Eshonkul's bold research is able to harmonize national artistic thinking with the achievements of world literature with the artist. It is also worth noting that for various controversial discussions, such as the non-integration of modern literature experiences into the Uzbek national spirituality, Eshonkul's self-justified search for this issue can be a lesson for other creators in relation to modern.

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Issue Article

Dilshod Shukurullayevich Kholikov
Samarkand State University
Senior Lecture to Department of
Theoretical and Applied Mechanics,
dilshodxoliqov2586@mail.ru

EQUATION OF TORSIONAL VIBRATIONS OF ROUND CONICAL ROD AND ITS SOLUTION

Abstract: *In this work, on the basis of the equations of torsional vibrations of a circular conical rod derived by the author, taking into account physical nonlinearity, the problem of torsional vibrations of a rod is numerically solved. A comparative analysis of the results obtained for nonlinear and linear cases is carried out. To solve the problem, a numerical finite difference method is applied. The approximation of the oscillation equation and boundary conditions leads to a system of algebraic equations, the solution of which is not mathematically difficult. On the basis of the obtained numerical data of the problem, graphs of the dependences of the torsional displacement and stresses on time were constructed. The main conclusions made on the basis of the constructed graphs of displacement and stresses are presented.*

Key words: *mathematical model, conical rod, torsional vibrations, displacement, stresses, physical nonlinearity.*
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УРАВНЕНИЕ КРУТИЛЬНЫХ КОЛЕБАНИЙ КРУГЛОГО КОНИЧЕСКОГО СТЕРЖНЯ И ЕГО РЕШЕНИЕ

Аннотация: *В данной работе на основе выведенных автором уравнений крутильных колебаний круглого конического стержня с учетом физической нелинейности численно решается задача о крутильных колебаниях стержня. Проведен сравнительный анализ результатов, полученных для нелинейного и линейного случаев. Для решения задачи применяется численный метод конечных разностей. Аппроксимация уравнения колебаний и граничных условий приводит к системе алгебраических уравнений, решение которых не представляет математической сложности. На основе полученных численных данных задачи построены графики зависимостей крутильных перемещений и напряжений от времени. Представлены основные выводы, сделанные на основе построенных графиков перемещений и напряжений.*

Ключевые слова: *математическая модель, конический стержень, крутильные колебания, перемещение, напряжения, физическая нелинейность.*

Введение

В работе [1] рассмотрены задачи физически-нелинейной теория упругости, при которых закон Гука заменяется нелинейным законом упругости, но сохраняются геометрические соотношения классической теории упругости. Предложены математические модели стержней, учитывающие геометрическую и физическую нелинейности и депланацию (изменение формы поперечного сечения) при кручении в результатах исследований [2,3], на базе которых изучается распространение и взаимодействие интенсивных упругих волн. Построение основных соотношений стержневой теории заключается в приведении трехмерной задачи к одномерной. Исследователи при этом стараются вывести уточненные

дифференциальные уравнения колебаний, учитывающие те или иные факторы физического, механического или геометрического характера [4,5,6]. Исследователи при этом стараются вывести уточненные дифференциальные уравнения колебаний, учитывающие те или иные факторы физического, механического или геометрического характера [7,8].

Основные соотношения.

В цилиндрической системе координат (r,θ,z) рассмотрим однородный и изотропный круглый вязкоупругий конических стержень радиуса $r^* = r_0 + kz,\ \ k = tg\varphi$ (рис.1). Считается, что связь между напряжениями и деформациями задана физически нелинейными соотношениями [1]:

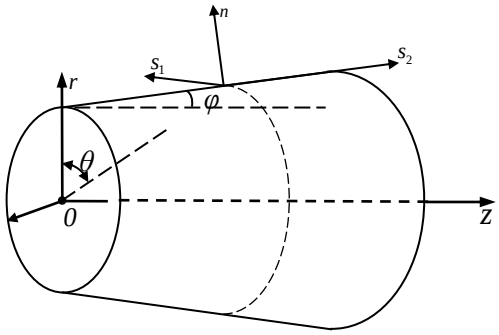

Рис 1.

$$\tau_{r\theta} = G\gamma\left(\psi_0^2\right)\varepsilon_{r\theta}, \quad \tau_{z\theta} = G\gamma\left(\psi_0^2\right)\varepsilon_{z\theta}. \qquad (1)$$

где $\varepsilon_{r\theta} = \frac{\partial V}{\partial r} - \frac{V}{r}$, $\varepsilon_{z\theta} = \frac{\partial V}{\partial z}$ – компоненты тензора деформации; G – модуль сдвига; $\gamma\left(\psi_0^2\right) = 1 + \gamma_2\psi_0^2$ – нелинейный функционал; $\psi_0^2 = \frac{2}{3}\left(\varepsilon_{r\theta}^2 + \varepsilon_{z\theta}^2\right)$ – интенсивность деформации сдвига; $\gamma_2 < 0$ – коэффициент, характеризующий физическую нелинейность стержня [1,5,13].

Задачи о крутильных колебаниях круглого стержня являются осесимметричными задачами относительно оси вращения и поэтому, компоненты тензора напряжений и вектора перемещений не зависят от угловой координаты θ. Следовательно, при крутильных колебаниях отличными от нуля будут только напряжения $\tau_{r\theta}(r,z,t)$, $\tau_{z\theta}(r,z,t)$ и крутильное перемещение $V(r,z,t)$. Исходя из этого уравнения движения круглого стержня при его крутильных колебаниях можно записать как (n,s_1,s_2) - ортогональные координаты [6]:

$$\frac{\partial \tau_{r\theta}}{\partial r} + \frac{\partial \tau_{z\theta}}{\partial z} + \frac{2\tau_{r\theta}}{r} = \rho\frac{\partial^2 V}{\partial t^2}, \qquad (2)$$

где ρ – плотность материала стержня.

Предполагается, что крутильные колебания вызываются напряжением $f_{ns_1}(z,t)$ на его поверхности, т.е. граничное условие задачи при $r^* = r_0 + kz,$ имеет вид:

$$\tau_{r\theta}(r_2,z,t) - k\tau_{z\theta}(r_2,z,t) = \Delta_0 f_{ns_1}(z,t), \qquad (3)$$

Подставляя выражения (1) в уравнения движения (2), получим дифференциальное уравнение в частных производных относительно перемещений. Здесь, Учитывая граничные условия (3) из уравнения (2) с учетом соотношений (1) после выполнения некоторых математических выкладок получим уравнения крутильных колебаний круглого стержня с учетом физической нелинейности

$$\frac{1}{b^2}\frac{\partial^2 V_0}{\partial t^2} - \frac{\partial^2 V_0}{\partial z^2} + \frac{2r^2}{3}\gamma_2\left(\frac{\partial V_0}{\partial z}\right)^2\left(\frac{1}{b^2}\frac{\partial^2 V_0}{\partial t^2} - \frac{\partial^2 V_0}{\partial z^2}\right) - \qquad (4)$$
$$-\frac{4k}{r}\frac{\partial V_0}{\partial z} = \frac{4\Delta_0}{r^2\mu} f_{ns_1}(z,t)$$

Здесь $b = \sqrt{G/\rho}$ – скорость распространения поперечных волн в материале стержня;

$V_0 = V/r$, в этом случае функция V_0 является главной частью смещения точек оси стержня.

Заметим, что уравнение (4) при $f_{ns_1}(z,t) \neq 0$ и $\gamma_2 = 0$ переходит в уравнение работы [6], при $f_{ns_1}(z,t) = 0$ и $\gamma_2 = 0$ переходит в классическое уравнение крутильных колебаний круглого стержня. Наконец при $f_{ns_1}(z,t) = 0$, $\gamma_2 \neq 0$ и отсутствии последнего члена уравнения совпадает с уравнением работы [1].

Постановка задачи.

Рассмотрим круглый стержень длиной l, подвергнутый воздействию внешней нагрузки на одном конце. Будем считать, что второй его конец закреплен. Тогда перемещения точек стержня

будут удовлетворять следующим граничным и начальным условиями:

$$V(r,z,t)\big|_{t=0}=0,\quad \frac{\partial V(r,z,t)}{\partial t}\Big|_{t=0}=0,$$

$$0\le z\le l,\qquad 0\le r\le r^*, \tag{5}$$

$$V(r,z,t)\big|_{z=0}=g(t),\qquad V(r,z,t)\big|_{z\to l}=0,$$

$$0\le t\le T,\qquad r=r^*. \tag{6}$$

Исследуем нелинейный волновой процесс в стержне, поверхность которого свободен от внешних нагрузок. Поэтому в качестве основного разрешающего уравнения примем уравнение (4) и полагая в нем $f_{ns_1}(z,t)=0$ в правой части вводя безразмерные переменные по формулам

$$t=\frac{l}{b}t^*,\quad z=z^*l.\quad V_0=V^* \tag{7}$$

Учитывая подстановки (7) в приведенном выше уравнении (4), приведем уравнение к следующему виду:

$$\left(\frac{\partial^2V_0}{\partial t^2}-\frac{\partial^2V_0}{\partial z^2}\right)\left\{1+\frac{2\delta_2(r_0+kz)^2}{3}\left(\frac{\partial V_0}{\partial z}\right)^2\right\}- \tag{8}$$

$$-\frac{4k}{(r_0+kz)}\frac{\partial V_0}{\partial z}=\frac{4\Delta_0}{\mu(r_0+kz)^2}f^{(2)}_{ns_1}(z,t)$$

Граничным и начальным условиями:

$$V(0,t)=\frac{g(t)}{r_0}\quad \text{при}\quad z=0;$$

$$V(l,t)=0\quad \text{при}\quad z=l; \tag{9}$$

$$V(z,0)=0\quad \text{при}\quad t=0;$$

$$\frac{\partial V(z,0)}{\partial t}=0\quad \text{при}\quad t=0, \tag{10}$$

где $$g(t)=\begin{cases}A\sin\left(\dfrac{\pi t}{t_1}\right), & \text{при}\quad t\le t_1;\\ 0, & \text{при}\quad t>t_1,\end{cases}$$

t_1 – время действия нагрузки.

Численное решение и обсуждения.

Для решения задачи применим численный метод конечных разностей в явном виде в области изменения независимых переменных z и t $(0\le z\le l,\ 0\le t\le T)$ построим прямоугольную сетку с постоянными шагами $h=l/N$ и $\tau=T/M$ (T – время пробега волны по длине стержня), координаты узлов которой определяются формулами

$$z=ih,\ i=0,1,...N;\quad t=j\tau,\quad j=0,1,...M.$$

Заменив производные функции перемещения в уравнении (8) конечно-разностными их выражениями

$$\frac{\partial^2V}{\partial t^2}\approx\frac{V_i^{j+1}-2V_i^j+V_i^{j-1}}{\tau^2};\quad \frac{\partial V}{\partial z}\approx\frac{V_{i+1}^j-V_{i-1}^j}{2h};$$

$$\frac{\partial^2V}{\partial z^2}\approx\frac{V_{i+1}^j-2V_i^j+V_{i-1}^j}{h^2}.$$

получим следующее алгебраическое уравнение

$$\left(\frac{V_i^{j+1}-2V_i^j+V_i^{j-1}}{\tau^2}-\frac{V_{i-1}^j-2V_i^j+V_{i+1}^j}{h^2}\right)\times$$

$$\times\left\{1+\frac{2\delta_2(r_0+k*i*h)^2}{3}\left(\frac{V_{i+1}^j-V_{i-1}^j}{2h}\right)^2\right\}-$$

$$-\frac{4k}{(r_0+k*i*h)}\left(\frac{V_{i+1}^j-V_{i-1}^j}{2h}\right)=\frac{4(1+k^2)}{(r_0+k*i*h)^2}f_i^j,$$

Решив данное уравнение относительно V_i^{j+1} будем иметь

$$V_i^{j+1}=2V_i^j-V_i^{j-1}+\frac{\tau^2}{h^2}\left(V_{i-1}^j-2V_i^j+V_{i+1}^j\right)- \tag{11}$$

$$-\frac{\dfrac{4k\tau^2}{(r_0+ikh)}\left(\dfrac{V_{i+1}^j-V_{i-1}^j}{2h}\right)+\left(\dfrac{4(1+k^2)\tau^2f_i^j}{(r_0+ikh)^2}\right)}{1+\dfrac{2\delta_2(r_0+k*i*h)^2}{3}\left(\dfrac{V_{i+1}^j-V_{i-1}^j}{2h}\right)^2}.$$

$$i=1,2,...N+1;\qquad j=1,2,...M+1.$$

Аналогично преобразовав граничные - (9) и начальные - (10) условий получим

при $z=0$, $V_0^j=A\sin\left(\pi\dfrac{j\tau}{t_1}\right)$;

при $z=l$, $V_{N+1}^j=0$. (12)

при $t=0$, $V_i^0=0$, $\dfrac{V_i^1-V_i^0}{h}=0$, (13)

Таким образом, исходная задача приводится к решению системы (11)-(13). Для решения задачи составлена программа С++. Для расчетов приняты следующие значения безразмерных параметров: $r_0=0.02$; $\varphi=1^\circ$; $k=tg1^\circ=0.0174$; $l=1$; T=1; A=0.0004. Время действия нагрузки считается равным $t_1=1$. Полученные численные результаты представлены на рис. 2-3 в виде графиков зависимостей перемещения от времени t в сечениях стержня z при различных значениях параметра нелинейности γ_2. *Материал стерджена:* (сплав алюминию Д16Т) [1,5]: – $G=0.277\cdot10^5 MPa$; $\rho=2780 kg/m^3$;

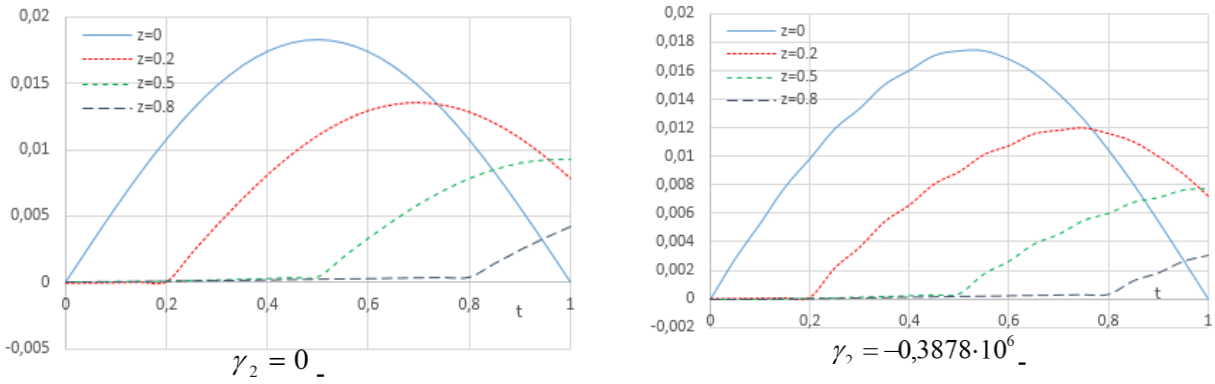

Рис 2.

Выводы.

Мы сравниваем линейные и нелинейные перемещения по графикам. Разница между линейными и нелинейными значениями при z = 0 составляет максимум 8,03 %, максимум 16,9 % при z = 0,2, максимум 20,05 % при z = 0,5 и максимум 25,3 % при z = 0,8. . Видно, что разница между смещениями увеличивается со сдвигом координаты z. При всех значениях малого параметра нелинейности максимальные значения перемещения $V(z,t)$ в нелинейном случае всегда меньше, чем в линейном случае. Отсюда следует вывод, что линейная модель дает повышенные максимальные значения перемещения чем нелинейная модель. Можно также наблюдать скачкообразное изменение значения перемещения по нелинейной модель и в конце времени затухания периода возмущений перемещения во всех сечениях стержня.

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Issue Article

Polat Zinatdinovich Khozhalepesov
Nukus branch of The Samarkand Institute of Veterinary Medicine
Associate Professor of «Natural and Humanities», Ph.D.
The department "Animal Husbandry and Biotechnology".

Timur Kuatbaevich Ismailov
Karakalpak State University named after Berdakh
Assistant teacher.
The department "Accounting and audit".

THE MAIN ISSUES OF THE DEVELOPMENT OF COTTON AND TEXTILE INDUSTRY IN THE REPUBLIC OF UZBEKISTAN

Abstract: *The article describes measures to improve the cotton and textile industry and production of our Republic, to develop the production of ready-made products from seeds. Also, measures to be taken to further strengthen the health of the textile sector, systems to be introduced to support farms and clusters, activities and tasks of institutes and scientific centers are discussed. Also, it presents vast opportunities given to manufacturers and exporters of finished products, the funds allocated to them and attracted by them, as well as the intended goals and tasks for personnel training and improvement of their qualifications.*

Key words: *cotton, seed, agriculture, agrotechnology, value addition, cluster, infrastructure, brand, industry, accredit, institution, dual education.*

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Introduction

Our country's agriculture, especially cotton, has a great potential for creating a systematic chain for the production of ready-made products from seeds. For this, our state is taking all necessary measures. In order to use and implement these opportunities, on March 6, 2020, the President of the Republic of Uzbekistan issued Decree No. the decision has been made. [1]World practice shows that the only way to achieve high productivity is to effectively use the advanced achievements of science and wide application of modern agrotechnology, with a deep study of climatic conditions in the regions.

The introduction of a new system of activity in the agrarian network, the cluster method, began to bear its results today. In this way, continuous research is being carried out on further improvement of this system, production of agricultural products, deep processing of raw materials.

A lot of results are being achieved, but they are still not in line with the intended goals. Therefore, it is necessary to strengthen the ongoing work, to pay attention to the factors that encourage it.

At the video selector meeting, the head of state emphasized the importance of urgent tasks in the field of increasing the volume of cotton production at the expense of science-based seed breeding and agro-technologies and increasing the export of textile products based on deep processing of cotton.

[1]On March 6, 2020 by the President of the Republic of Uzbekistan "On measures to introduce market principles in the cotton industry" No. PQ-4633 decision.

Numerous projects have been done and changed in the field of textiles in terms of economic development and added value, utilization of our resources and analysis of our capabilities. This is definitely the first step. In order to continue such work, it is necessary to analyze the experiences of the world community in depth and think about what we should do and what we should pay attention to. In order to find a solution to this problem, it is necessary to deepen the processing and efficient use of land based on innovation and science.

Currently, the first goal of further development of the industry is to increase the yield and volume of cotton by at least 30% through science-based seed production and agro-technology as well as to provide employment and to find a market and export.

The second is to at least double the export of cotton processing industry. This is a great opportunity and resource for our economy. Textiles are a low-cost and more profitable industry than gold. For this reason, the cluster system was fully introduced by our state in textiles.

Today, 100 percent processing of cotton fiber has been started. Five years ago, this figure was 40 percent.

In order to support the industry, our state has allocated more than 23 trillion soums of preferential funds to textile clusters in the last three years. In addition, about 7 trillion soums were transferred from the clusters' own accounts, and as a result, 350 large factories were put into operation, the production volume increased fivefold, and exports increased fourfold to 3 billion dollars.

Today, the fiber processing capacity has reached 1 million 300 thousand tons. If there is enough raw cotton, this figure can be increased to 300,000 tons.

In the next five years, this need will increase by another 600,000 tons. Of this, 300,000 tons are artificial cotton fibers, and 300,000 tons of cotton fibers are needed. Although the cotton fields of the Turkish state are 2 times less than ours, they produce almost the same amount of fiber. In Turkey, an average of 1.5 tons of fiber is obtained from 1 hectare, in our country this figure is 750 kg. This indicates that science and modern technologies have not been introduced in this field to date.

At present, the total yarn recycling rate is 23 percent. Of this, 4% in Navoi, 5% in Kashkadarya, 8% in Surkhandarya, 9% in Karakalpakstan, which in turn shows that 9 billion dollars are lost annually. If all the conditions are created for the clusters, given opportunities and proper work organized, it is possible to increase the number of jobs in textiles from the current 400,000 to 1 million.

It is planned to introduce a new system for increasing cotton productivity. The formation of the "Cotton Council" under the leadership of the Ministry of Innovative Development under the President is planned to eliminate the deficiencies in seed production, tillage, fertilization, and irrigation. Each year, the council determines the breeding and planting of high-yielding and early maturing varieties for each cluster. Also, the work, events and suggestions are made to the President every month by the Council.

At the same time, it is expected that a scientific center will be established under the Council and funds in the amount of 10 billion soums will be allocated annually. Within a year, all clusters will start and work on "Polytex" cluster experiments located in the Saykhun Obad district. In this cluster, he established a scientific center consisting of seed production, a laboratory of soil analysis and a meteorological station. Also, five new varieties of cotton are developed and supplied to neighboring districts and for export. As a result, the yield of cotton in the cluster increases by 3 centners every year, and it is planned to get 40 centners this year.[2]

By the end of the year:

Firstly, each cluster should include seed production, seed analysis and biolaboratories, seed processing workshops, and establish seed production and agrotechnological factories of the cotton breeding institute and genomics center in Andijan, Bukhara, and Surkhondarya regions on the basis of public-private partnership;

Secondly , by the end of the year, analyzing the productivity of each cluster, developing a map of land areas, taking measures to increase productivity;

Thirdly, the tasks of using resource-saving technologies of irrigation of all clusters were determined.

In the last two years, drip irrigation was introduced in 169,000 hectares of cotton fields. At the same time, it is planned to introduce drip irrigation on 160,000 hectares by the end of the year, and on the same number of cotton fields next year.

A new electronic portal created and launched by our state will include all suppliers, and a system for evaluating the price and quality of services of the proposed water-saving technologies will be introduced. Farmers and clusters are given the opportunity to choose the most favorable conditions and prices. It is expected that the amount of subsidy allocated per hectare will be increased if the closed pipe irrigation system is introduced by the cluster or farmers instead of drip irrigation.

This year, 105 million cubic meters of water were saved and an additional 60,000 tons of harvest

[2]Decision No. PQ-179 of the President of the Republic of Uzbekistan of March 25, 2022 "On measures to increase soil fertility and productivity in cotton fields, to support the introduction of new irrigation technologies"

was achieved due to laser leveling on 200,000 hectares of cotton fields.

Fourthly, the legal guarantees of cluster activities were strengthened and it was forbidden for governors to interfere in the internal affairs of clusters. As a result, industry, jobs, exports and income will increase in the district.

The establishment of the Republican commission for the systematic organization of deep processing of cotton raw material and yarn was established. Its main task is to plan and ensure the preservation of the 9 billion dollars that are currently being lost. In addition, separate industrial zones will be established and all conditions will be created for manufacturers of ready-made products. It is expected that 40 billion soums will be allocated from the budget for these projects and construction of water treatment facilities and other infrastructures will be made this year. Also, until the end of the year, the task of attracting 500 million dollars for bringing the equipment of manufacturers to the newly established industrial zones and lending them was assigned.

The boycott of Uzbek cotton was canceled, foreign brands and large companies signed contracts worth 50 million dollars to cooperate with local enterprises, and 30 Uzbek manufacturers took their products to international exhibitions.

Further support the export operations, the introduced systems will be further expanded, and the export agency will allocate 5 million dollars of working capital to the exporting enterprises based on the volume of production. That is, from the day of the enterprise's export, it is possible to receive a loan in the amount of 80 percent of the letter of credit by the banks serving it.

The export agency will allocate 50 million dollars to the production of these products, and it is planned to allocate 100 million dollars to the export agency from the budget to provide the enterprises exporting finished products with working capital.

Up to 10% subsidy will be given to exporters of dyed knitted fabric and gauze, special air flights will be launched based on orders for the delivery of finished products to foreign brands. The tasks of manufacturing fittings and accessories necessary for brands have been defined.

Regarding the issue of personnel training in the field, the institute of textile and light industry and the Uzbekistan-Korea textile technopark will work on the basis of the integrated system, and a dual education system will be introduced from the new academic year.

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Issue Article

Irada B. Hajiyeva
Azerbaijan University of Architecture and Construction
1073, Baku, 11, A. Sultanov street,
Institute of Chemistry of Additives named after Academician A.M.Quliyev
ANAS 1029, Baku, Boyukshor highway, quarter 2062
irada70@yahoo.com

THE CONDENSATION PRODUCT OF CHLOROACETAMIDE WITH FORMALDEHYDE AND THE PREPARATION OF N, N'-OXYDIMETHYLENE AND N, N'-METHYLENEBISALKYLXANTOGENATO ACETAMIDES BASED ON THEM

Abstract: *N-methylolchloroacetamide, N,N'-oxymethylenebischloroacetamide and N,N'-methylene bischloroacetamide were synthesized, which has got different reactive capability and were reacted with alkaline salts of alkyl xanthogenic acids. Optimal conditions for the synthesis of N, N'-oxydimethylene- and N, N'-methylenebisalkylxanthogenatoacetamides, whose structure has been studied by IR and NMR spectroscopy methods and are uniquely consistent with the formulas attributed to them. The structure of all synthesized compounds was proved by studying their physicochemical properties, including the determination of refractive indices ($n^{20}_{D)}$, specific gravity ($d^{20}_{4)}$ and the calculation on their basis of molecular refraction. With their subsequent comparison, elemental composition and IR spectroscopy. The IR-spectrums of absorption were taken with the SPECORD-75IR IR spectrophotometer, made by Karl-Zeis (GDR) firm, using prisms KBr in the 4000-400 cm^{-1} region. Absorption bands (most characteristic): stretching vibrations of the C-H bond 2928-2856 cm^{-1}, stretching vibrations of the N-H 3384-3192 cm^{1} bond, stretching vibrations of the C = O 1648 cm^{-1} carbonyl group, and an intense absorption band of 768 and 556 cm^{-1} C-Cl bonds correspond to functional bonds and groups of synthesized compounds, which confirms their structure. The structure of the compounds was also confirmed by ^{1}H NMR and ^{13}C NMR spectra, taken in a solution of dimethyl sulfoxide (DMSO d_6). NMR spectra were recorded on "Bruker AC300" spectrometer with operating frequency of 300.13 MHz and 75.47 MHz.*

Key words: *xanthogenic acids, chloroacetamide, condensation, N- chloroacetamide, N,N'-methylene bischloroacetamide.*

Language: *English*

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Introduction

Studies carried out in the field of petrochemical synthesis show that chemical compounds that have sulfur, nitrogen atoms and various functional groups in the molecule improve both lubricating and biocidal properties of oils [1,2]. Therefore, the synthesis of new sulfur- and nitrogen-containing compounds is of great interest in science.

The aim of this work is the synthesis of new compounds containing, along with a xanthogen group, an amide group, enhancing the biological activity of the compounds, which was confirmed earlier by our works [3,4,5]. In the present article, the results of studies on the synthesis of N,N'-oxydimethylenebisalkylxanthogenetoacetamides and N,N'-methylenebisalkylxanthogenacetamides.

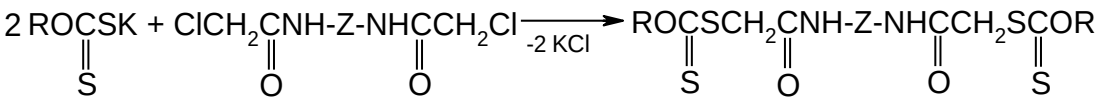
Material and Methods

The key compound of this work is chloroacetamide, since new compounds of N,N'-oxydimethylene and N,N'-methylenebisalkylxanthatoatoacetamides were obtained on the basis of substituted chloroacetamides. More extensive studies, including temperature dependence, showed that at high temperatures the reaction cannot be stopped at the stage of formation of the N-methylol derivative: the N-methylolchloracetamide molecule condensing with the second molecule, and leads to the formation of N,N'-oxydimethylene bischloroacetamide. As further studies showed, N,N'-methylenebischloroacetamides were also obtained at high temperatures, by the reaction of chloroacetamide and formaldehyde, taken at the ratio of 2:1.

$$2ClCH_2CONH_2 + CH_2O \xrightarrow[-H_2O]{120-130^{\circ}C} ClCH_2CONHCH_2NHCOCH_2Cl$$

In this case, we can assume that, first, formaldehyde reacts with chloroacetamide and N-methylolchloracetamide is obtained, the latter in its turn, condensing with the second molecule of chloroacetamide, which leads to the formation of N,N'-methylenebischloroacetamide[6,7,8] .

Based on N-substituted chloroacetamides, a number of new compounds have been synthesized, both with thiocarbonate and amide groups in the molecule, by interacting with the salts of xanthogenic acids, including the preparation of N, N'-oxydimethylene and N, N'-methylenebisalkylxanthatoacetamides.



Z=CH_2OCH_2, R=C_2H_5, C_4H_9, C_6H_{13}.
Z=CH_2, R=C_2H_5, C_4H_9, C_6H_{13}.

The reactions were carried out not in water medium, but in a solution of dimethylformamide. This can be explained by the fact that the N,N'-methylene- and N,N'-oxydimethylene bischloroacetamides – are the compounds with high melting temperatures, therefore poorly dissolve in water and during the reaction their concentrations are very small, which in turn causes too long reaction time, dimethylformamide is more suitable for use because it is a solvent suitable for all reaction components. To expand the synthetic possibilities of obtaining these substances by alternative methods was also of interest[9,10] .

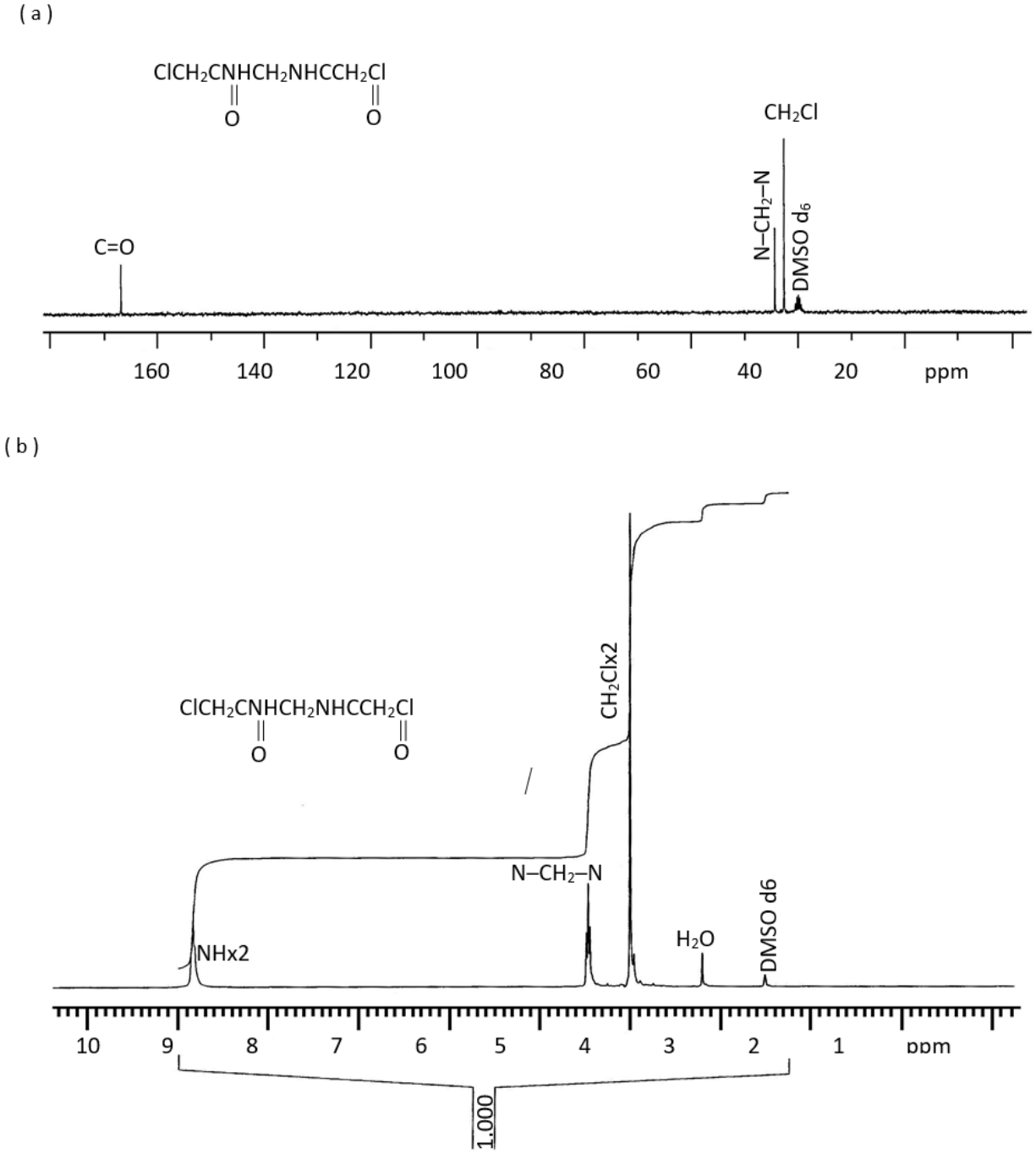


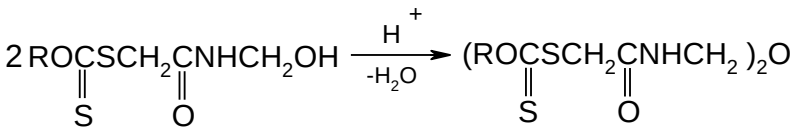
Fig. 1. N, N'- Methylenebischloracetamide in dimethylsulfoxide D_6 solution ^1H (a) and ^{13}C (b) NMR spectrs.

NMR spectrum ^6C in dimethylsulfoxide D^{13} solution of n,n-methylene bischloracetamide has been studied. NMR′H, δ , m.h. 4c (4H, $2CH_2Cl$), 4.44t (2H,

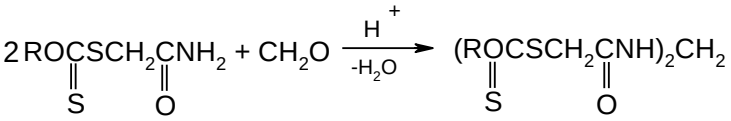
That is, the methods used to prepare N,N'-oxydimethylene and N,N'-methylenebischloroacetamides were also used to prepare N,N'-oxydimethylene and N,N'-methylenebisalkyloxanthanoacetamides.

NCH_2N), 8,82t (2H, 2NH). NMR^{13}C, δc, m.h.: 42.45 (CH_2Cl), 44.34 (NCH_2N), 166.7 (C=O)

An alternative method for the preparation of N, N'-oxydimethylenebisalkylxanthogenates was the condensation of two molecules of O-alkyl-S- (N-methyl-carbamoyl) xanthates in a weakly acidic medium (pH = 5-6)



N, N'-methylenebisalkylxanthanoacetamides were prepared by condensation of O-alkyl-S-carbamoylmethylxanthanoethoamide and paraformaldehyde in the presence of hydrochloric acid (catalyst).



The IR-spectrums of absorption were taken with the SPECORD-75IR IR spectrophotometer, made by Karl-Zeis (GDR) firm, using prisms KBr in the 4000-400 cm^{-1} region. Absorption bands (most characteristic): stretching vibrations of the C-H bond 2928-2856 cm^{-1}, stretching vibrations of the N-H 3384-3192 cm^{1} bond, stretching vibrations of the C = O 1648 cm^{-1} carbonyl group, and an intense absorption band of 768 and 556 cm^{-1} C-Cl bonds correspond to functional bonds and groups of synthesized compounds, which confirms their structure.

The structure of the compounds was also confirmed by ^{1}H NMR and ^{13}C NMR spectra, taken in a solution of dimethyl sulfoxide (DMSO d_6). NMR spectra were recorded on "Bruker AC300" spectrometer with operating frequency of 300.13 MHz and 75.47 MHz.

The main characteristic signals of the peaks corresponding to the chlorinated derivative of acetamide:

NMR 1 H, δ ppm: 4c (4H, 2CH2Cl), 4.44t (2H, NCH2N), 8.82t (2H, 2NH). NMR 13C, δ, ppm: 42.45 (CH2Cl), 44.34 (NCH2N), 166.7 (C = O).

Characteristic signals of the peaks of N, N'-oxydimethylene and N, N'-dimethylenebisalkylxanthogen tetraacetamides:

NMR 1H, δ ppm: 0.97t (6H, 2CH3), 141m 4c (4H, 2CH2), 177m (4H, 2CH2), 3.83c (4H, 2SCH2), 4.4t (2H, NCH2N), 4.54t (4H, 2CH2O), 8.88t (2H, 2NH), 13C NMR, δ ppm: 14.2 (CH3), 19.2 (CH3-CH2), 30.0 (C2H5 -CH2), 39.0 (SCH2), 74.2 (CH2O), 167.0 (C = O), 213.5 (C = S).

Purification of the products was carried out by distillation in vacuum or by recrystallization from alcohol.

Conclusion

New compounds - N, N'-oxydimethylenebisalkylxanthatoacetamide and N, N'-methylenebis-alkyloxanthogenatoacetamide, the structure of which was proved by NMR spectroscopy data.The initial N-methylolchloroacetamide with a yield above 80% is obtained by carrying out the reaction in isopropyl alcohol at a 1: 1: 0,05 component ratio (mole NaOH).

It must be noted that it is impossible to prevent the interaction of chloroacetamide with formaldehyde in the first stage of the reaction, i.e., in the stage of obtaining N- metiloxlorasetamid in the reactions with the participation of the acid catalysts, because, partially condensed it turns into N, N^1 – oksidimetilenbisxlorasetamide. But if the temperature regime (60 - 70˚ C) and especially the acidity (pH= 5-6) of the condition is exactly controlled, it can be possible to obtain the pure final product. When the acidity of the condition is extended (pH≤ 2), then losing formaldehyde gradually, N, N^1-oksidimetilenbisxlorasetamid turns into the final product N, N^1- metilenbisxlorasetamid, which is more durable both chemically and thermically.

Summering all the above- mentioned, we come into conclusion that studying in complex the interaction of xloracetamide and formaldehyde, it is possible to identify the influence of different factors to the process of reaction, as well as, the components of the obtained products and their conversion. Here, in the reaction of xloracetamide with formaldehyde the main object is to obtain sulphur derivatives, which are able to dissolve in the oil. For that reason, we obtained these products.

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	GIF (Australia) = 0.564	ESJI (KZ) = 8.771	IBI (India) = 4.260
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Issue Article

Abdurakhman Abdulahatovich Mirisaev
Tashkent Architecture and Civil Engineering Institute
PhD in Economics, Associate Professor,
(TACEI), «Economics and Real Estate Management» Department,
Tashkent, Republic of Uzbekistan,
abdurahmonm@mail.ru

Sanjarbek Olimjon son Kholboev
Tashkent Architecture and Civil Engineering Institute
master,
(TACEI), «Economics and Real Estate Management» Department,
Tashkent, Republic of Uzbekistan,
Danya3559559@gmail.com

THE ROLE OF CONTRACTOR ORGANIZATIONS IN THE CONSTRUCTION OF AFFORDABLE HOUSES FOR THE POPULATION OF UZBEKISTAN

Abstract: *This article analyzes the role of construction-contracting organizations in providing the population with affordable housing and the current situation. Also, on the basis of improving the system of providing affordable housing, the issues of meeting the demand for housing of the population have also been discussed.*

Key words: *construction of low-cost housing, contracting organizations, economic basis of housing construction, analysis of the state of housing construction, housing loan issues.*

Language: *English*

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Introduction

To date, in order to provide affordable housing for low-income segments of the population, in 2021 it is planned to allocate 2.4 trillion soums from the state budget account to finance the construction of apartment buildings in rural areas and cities. Building high-quality and modern housing for the population of our country and providing the population with large-scale housing is an urgent task. As a result of the construction of houses, owning one's own apartment has been raised to the level of value in our nation since ancient times. Therefore, every family in our country wants to have their own house, regardless of their financial conditions, social status and level.

If you go to any region of our republic today, you can't help being surprised by the ongoing creative work, the construction of modern housing and buildings. At present, the old city is replaced by a new and modern house - places and the high quality of service of the infrastructure facilities that serve the population increases our admiration even more.

In this regard, in the address of the President of our country to the Oliy Majlis, special attention was paid to the issues of reforming the social sector, and it was noted that "The implementation of the adopted programs on the reform of the social sector, which is an extremely important direction of the state policy carried out in Uzbekistan, is being ensured step by

step."[1].

Taking into account the demands and wishes of the multi-ethnic people of Uzbekistan, on the initiative of the head of state, the implementation of construction of affordable housing project on the basis of preferential mortgage loans was started in 2017.

Analysis of literature on the topic

Regarding housing construction, the fact that scientific research is being carried out in the field in the Housing Code, in the decisions and decrees of the President of the Republic of Uzbekistan, and in the decisions of the Cabinet of Ministers also reflects the relevance of this topic.

In the decision of the President of the Republic of Uzbekistan dated January 13, 2017 "On additional measures for the effective implementation of the Program for the Construction and Reconstruction of Available Multi-Unit Housing in the City of 2017-2020" No. PQ-2728 191 multi-unit houses with an area of 554.8 thousand square meters are being constructed and reconstructed in Tashkent and other cities of the republic in accordance with the decisions taken on improving the housing conditions of other categories of citizens who need to improve their living conditions[2].

The decision of President Shavkat Mirziyoyev on October 21, 2016 "On a Program for Constructing Affordable Appartment Houses on the basis of updated Standard Projects in Rural Areas in the years 2017-2021" brought the work in this regard to a new stage. The implementation of this decision serves to radically increase the level of use of modern and comfortable houses for a large segment of the rural population, to ensure the rational use of land resources, and to further develop individual housing construction in rural areas[3].

Decision PQ-3350 of the President of the Republic of Uzbekistan dated October 23, 2017 "On additional measures for the effective implementation of the Program for the Construction and Reconstruction of Available Multi-Unit Houses in the City of 2017-2020" and a number of documents related to this issue are aimed at increasing the efficiency of work in this area is serving [4].

Research methodology

Empirical research method was mainly used in the implementation of the research, that is, the issues of increasing the social well-being of the population based on housing construction were considered, the issues of crediting housing construction were mentioned in detail, and conclusions and proposals were developed regarding the improvement of the sector.

Analysis and results

In the following years, large-scale works were carried out in the republic to improve the architectural appearance of rural settlements, to raise the standard and quality of life of rural residents due to the construction of individual houses according to model projects, and the rapid development of engineering and transport communications in the village, as well as social infrastructure facilities. Only in 2009-2016, 69,557 comfortable houses with a total area of 9,573,000 square meters were built in 1,308 housing estates in rural areas. The living conditions of more than 83,500 families in the villages have been improved[2].

A total of more than 3.5 million square meters of model houses and multi-storey buildings were built in our cities and villages. If we compare this number with the previous years, we see that 20 times more houses were built than in 2007, 3.5 times more than in 2010, when the model housing construction program started, and 2 times more than in 2014.

The head of the state emphasized the need to pay more attention to the housing problem of the budget sector employees and low-income families, which is one of the most urgent problems in this direction and which afflicts many families.

It is worth noting that for the first time in the next 25 years, we began to build affordable multi-unit housing with all amenities for residents. In 2017 alone, more than 800,000 square meters of such houses were built and put into use. In the city of Tashkent alone, 420,000 square meters of high-rise housing stock was commissioned this year. This is almost 3 times more than last year[3].

At the same time, the results of the study showed the need to develop fundamentally new approaches that ensure high efficiency of construction, fully taking into account the real needs and purchasing power of the population, as well as the national mentality and living conditions in rural areas.

The growing need of the rural population for modern and affordable houses requires the introduction of high-level conditions of preferential lending, the further expansion of the use of new types of energy-saving materials and equipment, as well as the reduction of the cost of the houses being built.

Taking into account these important tasks, the decision of the President of the Republic of Uzbekistan on October 21, 2016 "On a Program for Constructing Affordable Appartment Houses on the

[1] Address of the President of the Republic of Uzbekistan Shavkat Mirziyoyev to the Oliy Majlis// "Halq sozi", December 23, 2017.

[2]Decision PQ-2639 of the President of the Republic of Uzbekistan dated October 21, 2016 " On a Program for Constructing Affordable Appartment Houses on the basis of updated Standard Projects in Rural Areas in the years 2017-2021" // "Halq sozi", October 25, 2016.

[3]Address of the President of the Republic of Uzbekistan Shavkat Mirziyoyev to the Oliy Majlis.// Halq sozi, December 23, 2017.

basis of updated Standard Projects in Rural Areas in the years 2017-2021" which radically increases the level of access to modern and comfortable houses for large sections of the rural population is the main preliminary document aimed at ensuring the rational use of land resources and further development of individual housing construction in rural areas.

This decision, taking into account the accumulated experience, construction contracting organizations will contribute to individual housing construction in rural areas. The decision envisages the implementation of a large-scale Program for building affordable houses in rural areas for a period of five years. The updated model projects based on the program fully take into account the above-mentioned requirements and needs of the villagers, as they have been developed taking into account their opinions and wishes.

The program envisages additional construction of the three cheapest types of single-family housing samples according to price parameters and comfort in rural areas:

- Two or three-storey multi-apartment (2-, 3-room) houses with outbuildings and pleasant yards;
- one-story 2- and 3-room houses placed on plots of land with an area of 0.02 hectares together with buildings in the yard in densely populated districts;
- includes two-storey 4-room combined houses on plots of land with an area of 0.04 hectares together with buildings in the yard. The construction of existing model houses (6 acres) will also be continued.

The area and estimated prices of individual housing samples are determined as follows according to the type of housing.

According to ***the first type*** of housing, the estimated cost of two-room apartments with a total area of 42.4 square meters will be 72.5 million soums, including farm buildings - it is planned to be 85 million soums. In turn, three-room apartments have an area of 52.4 square meters constitute an average price of 88.5 million soums, including farm buildings it will be 100.7 million soums.

In the construction of these houses, taking into account the needs and wishes of the apartment owners, it is envisaged to build buildings located in the yard - playgrounds, verandas for recreation, showers, etc.

According to ***the second type*** of housing, cheap one-storey, two- and three-room houses will be built on a 2-hectare plot of land in densely populated districts. The total area of such a two-room house is 53 square meters and the estimated cost is 93.8 million soums (101.5 million soums with farm buildings). A three-room apartment is 63.5 square meters and costs 111 million soums on average (118.7 million soums, including farm buildings). Farm buildings are planned to be built in the yard of the houses.

The third type. They are two-storey four-room houses with a total area of 115 square meters and will be built on a 4-hectare land plot. The price is 162 million soums, with farm buildings it is 181.8 million soums.

If the initial contribution of the house builder was 25 percent within the framework of the program of individual construction of houses on model projects in rural areas, adopted in 2009, this contribution under the new Program is only 15 percent for the builders of the first and second types of houses. This will help attract a wide range of rural residents to the Affordable Housing Program.

In addition, the mortgage loan is granted for a period of 15 years with a three-year grace period and an annual interest rate of 7 percent during the first 5 years. In the following years, the interest rate of the loan will not exceed the refinancing rate of the Central Bank, which is currently 9 percent per annum.

According to the decree, the following sources are used for financing the housing construction:

- population own funds, i.e. initial contribution. In this case, the initial contribution of citizens applying for housing is the following amounts:
- 15 percent - for two- and three-storey multi-apartment (2-3-room) houses and 2-3-room single-storey (2-story) houses;
- 25 percent - for 4-storey houses (two-story 4-room combined) and 6-storey houses;
- final contribution.

Within the framework of the Program of the construction of affordable habitation on updated standard projects in rural areas for 2017-2021, in the category of affordable housing in rural areas - two- and three-storey multi-apartment (2-3-room) houses and 0.02 hectares with courtyard buildings and well-kept yards. size plots include one-story 2- and 3-room houses with buildings in the yard, which are located in densely populated districts.

Applicants for these houses are determined by self-governing bodies of citizens. They carry out the initial selection of families in need of improvement of housing conditions. In this case, a description will be given to the applicant for the first and second type of housing. This ensures transparency and reliability of the system.

When giving a description to citizens, the self-governing body of citizens takes into account the following social criteria:

a) the applicant does not have a residence with the right of ownership and lives in a residence under lease conditions or in an unfit apartment;

b) live in the same house (apartment) with another family or other families; c) having many children;

d) low income of the family;

e) one or more children are brought up and cared for by one of the parents (incomplete family);

f) the presence of persons suffering from serious types of chronic diseases among the applicant's family members and needs to live in a separate room according to the list approved by the Ministry of Health;

j) presence of the first group of disabled people among the applicant's family members;

h) that the housing area is not in accordance with the social norms stipulated by the legislation.

The granting loans conditions for housing applicants include the following:

- be a citizen of Uzbekistan who has turned 18 years old on the day of application, lives in a rural area, has creditworthiness;
- being a family in need of improving housing conditions (for housing recipients of types 1 and 2);
- fully formed the initial contribution (15 percent of the housing value for houses of type 1 and 2, not less than 25 percent for houses of type 3 and 6 plots);
- up to 1000 times the minimum wage, (for housing to be built on 4 and 6 acres of land), as well as 75% of the estimated value of the housing under construction (for houses of type 3 and 6) and not more than 85 percent (for houses of type 1 and 2);
- at a preferential interest rate;
- with a 3-year grace period for principal repayment;
- The loan is allocated for a 15-year period.

Another important feature of the program is the increase in requirements for the quality of construction and assembly works. ***In this case, a reduction in the cost of model houses built at the expense of optimizing the costs of construction-contracting organizations for the main building materials and items is provided.***

In addition, the affordability of houses is achieved due to the provision of tax, customs relief and other benefits for program (contractor) participants.

For example, contracting organizations are exempted from paying all types of taxes and mandatory contributions to state special funds for the volume of work performed within the framework of construction of affordable houses.

It is necessary to admit that the houses built according to the updated projects have no analogues in Central Asia in terms of price parameters, quality characteristics and comfort.

Due to various factors, the increase in the level of urbanization in the cities of our country has sharply increased the demand for housing, which is still scarce in these places. At such times, satisfied citizens with a wide range of possibilities buy the necessary housing, even though it is expensive, those who want to settle down in the city after graduating from a higher education institution for scientific work or work in a government office, and for children of low-income families, having their own private shelter is a big dream.

In this regard, the decision of the honorable President of November 22, 2016 No. PQ-2660 "On additional measures for the effective implementation of the Program of construction and reconstruction of affordable multi-apartment houses in cities for 2017-2020" serves as an important legal basis for meeting the population's demand for housing and started a new stage of large-scale reforms.

Materials and Methods

The purpose of this decision is to further improve the standard of living and provide social support to the population living in the city, including young families, other categories of citizens living in outdated housing and in need of better housing conditions by providing them with affordable, comfortable, modern housing. According to the decree, in 2018, it is planned to build 335 affordable multi-storey houses with 13,917 apartments (Table 1).

It can be seen from the table that in the future, that is, in 2017-2020, a total of 1,236 houses or 51,350 apartments are planned to be built in cities. Most of the planned houses are planned to be built in the city of Tashkent and the Tashkent region, 29,252 houses with apartments, i.e. 56.9%, and 727 low-cost multi-storey houses are 58.8% of the total under construction.

Table 1. The main parameters of the program for the construction of affordable multi-apartment houses in cities in 2018-2021[4], (unit)

№	Regions	Total		2018 year		2019 year		2020 year		2021 year	
		quantity of houses	quantity of apartments	quantity of houses	quantity of apartments	quantity of houses	quantity of apartments	quantity of houses	quantity of apartments	quantity of houses	quantity of apartments
	Total:	1 236	51 350	191	7 919	335	13 917	355	14757	355	14 757

[4] Decree PQ-2660 of the President of the Republic of Uzbekistan dated November 22, 2016 "On additional measures for the effective implementation of the Program of construction and reconstruction of affordable multi-apartment houses in cities for 2017-2020".

1.	Republic of Karakalpakstan	37	1 665	7	315	10	450	10	450	10	450
2.	Andijan region	49	2 058	7	294	14	588	14	588	14	588
3.	Bukhara region	36	1 512	6	252	10	420	10	420	10	420
4.	Jizzakh region	50	2 145	5	210	15	645	15	645	15	645
5.	Kashkadarya region	49	2 205	7	315	14	630	14	630	14	630
6.	Navoi region	29	1 218	5	210	8	336	8	336	8	336
7.	Namangan region	50	2 100	8	336	14	588	14	588	14	588
8.	Samarkand region	57	2 565	9	405	16	720	16	720	16	720
9.	Surkhandarya region	35	1 575	5	225	10	450	10	450	10	450
10	Syrdarya region	35	1 470	5	210	10	420	10	420	10	420
11	Tashkent region	135	5 664	15	624	40	1 680	40	1 680	40	1 680
12	Fergana region	47	2 010	5	210	14	600	14	600	14	600
13	Khorezm region	35	1 575	5	225	10	450	10	450	10	450
14	Tashkent city	592	23 588	102	4 088	150	5 940	170	6 780	170	6 780

The cost of affordable housing in cities. Order of the Cabinet of Ministers of the Republic of Uzbekistan No. 14 dated January 16, 2017 "On approval of the regulations on the procedure for the sale of multi-apartment residential premises to the category of citizens in need and reconstruction of apartment buildings, as well as improving housing conditions for young families, outdated housing and other categories".

According to it, apartments in multi-apartment houses are sold separately for each apartment provided by the customer - "Uzshakhar Qurilish Invest" limited liability company, at the prices specified in the reference book, which includes the costs related to the preparation of documents for the financing and realization of the construction or reconstruction of the multi-apartment house will be realized.

In order to buy an apartment in a multi-apartment building, an individual who needs to improve housing conditions must submit the following documents to the regional commission chaired by the khakim:

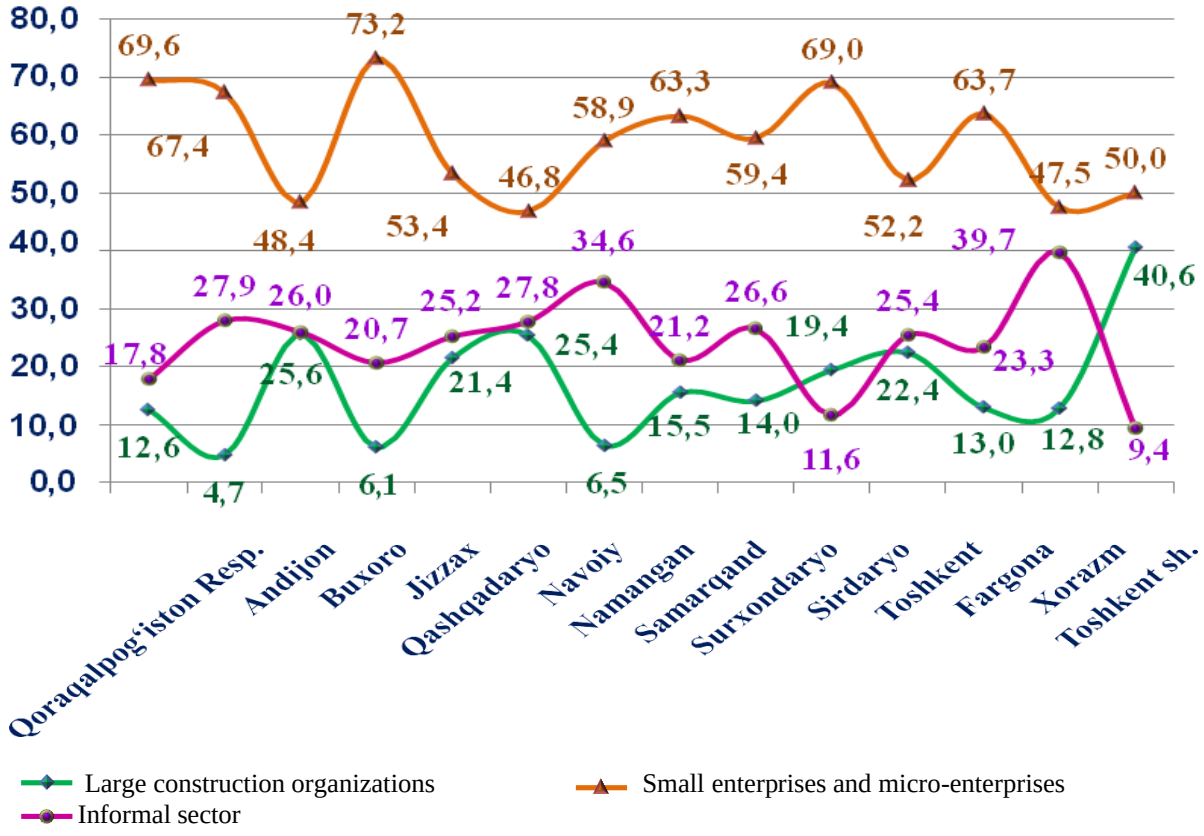
a) application;

The number of contracting enterprises and organizations operating in the construction sector has increased by 150.1% compared to 2019, and is one of the sectors that has been recording stable growth rates among national economic sectors.

- The number of enterprises and organizations operating in the field of construction is considered in the cross-section of the following directions of this field;
- Buildings and structures construction made up 56.4% share, the growth rate increased by 103.6% compared to 2020;
- the direction of construction of civil facilities made up 9.9%, and the growth rate increased by 113.4% compared to 2020;
- specialized construction works accounted for 33.7% share and 110.3% growth rate.

In January-December 2021, as part of the total volume of construction work, the volume of construction work performed by large construction organizations is amounted 29,685.6 billion soum.

Construction works amounted to 107.3% compared to 2020, and its share in the total volume of construction works decreased by 0.1 percentage points from the level of the indicator in 2020 and amounted to 27.6%.



Picture 1. Work of construction organizations in the Republic of Uzbekistan in the period of January-December 2021 [5]

The largest share of construction works performed by large construction organizations in the total volume of construction works is Tashkent city (40.6% of the total construction works in the region or 154.8% compared to 2020), Bukhara region (25.6% of the total construction works in the region i or 135.2% compared to 2020 and Navoi region (25.4% of the total volume of construction works in the region or 113.4% compared to 2020).

b) documents confirming the financial status of the borrower (joint borrowers);

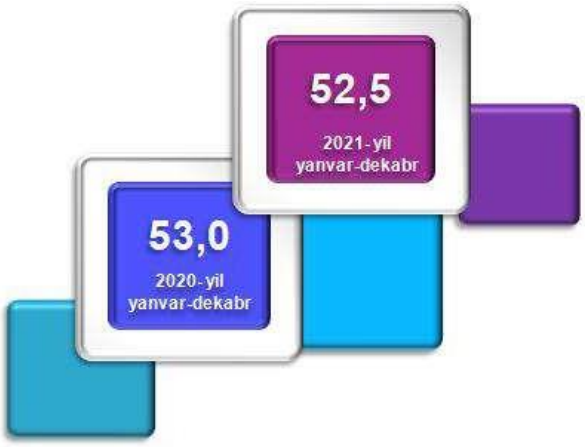
c) documents confirming the need to improve housing conditions.

Documents confirming the need to improve housing conditions include information on the following:

- does not have a residence with property rights and lives in a residence under the conditions of rent or free use and lives in old houses;
- living in the same house (apartment) with another family or other families;
- a large family; upbringing of child(ren) by father (mother) in an incomplete family;
- family members have a relative who has a serious chronic disease and needs to live in a separate house according to the law;
- family members have a disabled person of the first group; that the housing area is not in accordance with the social norm of the housing area provided by the legislation.

In January-December 2021, 52.5% of the total volume of construction works was contributed by the construction works performed by small contracting enterprises and micro-firms, which decreased by 0.5% compared to the 2020 indicator. Also, the recorded volume of construction works contributed by them was 104.7% compared to 2020 and amounted to 56,357.6 billion soums.

[5] The source is “Stat.uz”



Picture 2. Small contract enterprises and micro-firms and their share in %

In the reporting period of 2021, the highest share indicator by small contracting enterprises and micro-firms is Tashkent city (13,193.4 billion soums or 50.0% of the total volume), Tashkent region (4,749.8 billion soums or 52.2%), and Samarkand region (4,580.6 billion soums or 63.4%). The share of construction works accounted for by the informal sector was recorded as 19.9% or 21,404.4 billion soums. Comparing to 2020, it was 111.8%.

A total of 5,611.4 billion soum construction works were completed by state-owned organizations, while 101,836.2 billion soum construction works were carried out by non-state owned organizations. Their share in the republic was 5.2% and 94.8%, respectively.

Picture 3. Share of construction work contributed by the informal sector

Table 2. Construction works in the regions in the period of January-December 2021

	Construction works, bln. soum	Growth rate, in %	Including new construction, reconstruction, expansion and technical refacilitate
Republic of Uzbekistan	107 447,6	106,8	75 684,4
Republic of Karakalpakstan	4 772,6	110,5	3 204,4
regions:			

Andijan	5 619,1	107,9	3 722,1
Bukhara	7 371,2	111,4	4 294,8
Jizzakh	3 070,7	115,6	2 528,1
Kashkadarya	6 071,9	112,7	4 015,7
Navoi	5 079,0	115,1	3 912,0
Namangan	5 610,3	110,1	4 223,6
Samarkand	7 228,4	115,2	5 175,6
Surkhandarya	5 863,1	112,8	4 606,2
Syrdarya	2 883,0	117,0	1 822,7
Tashkent	9 105,5	111,7	5 072,9
Ferghana	7 024,2	115,8	4 521,0
Khorezm	4 272,1	132,3	3 520,9
Tashkent city	26 409,3	117,7	17 997,2

2021 - new construction in the period of January-December in the following regions in terms of work per capita, in particular, in the city of Tashkent - 6,383.4 thousand soums, in the Navoi region - 3,821.4 thousand soums, in the Bukhara region - 2,189,000 soums, 2,095,600 soums in Syrdarya region, 1,844,700 soums in Khorezm region and 1,771,700 soums in Jizzakh region.

Construction of buildings and structures made up 64.4% of construction works by types of economic activity. Also, 18.9% of the total construction works were carried out on the construction of civil objects and 11.7% on specialized construction works.

Table 3. Construction works per capita in the regions as of January 1, 2022

	Construction works per capita, thousand soums	**Growth rate, in %**
Republic of Uzbekistan	3 077,4	104,7
Republic of Karakalpakstan	2 465,0	109,0
regions:		
Andijan	1 744,6	105,8
Bukhara	3 757,0	109,9
Jizzakh	2 152,0	113,2
Kashkadarya	1 800,7	110,5
Navoi	4 961,4	113,0
Namangan	1 935,0	107,8
Samarkand	1 811,8	113,0
Surkhandarya	2 161,9	110,4
Syrdarya	3 314,6	114,8
Tashkent	3 121,7	113,0
Ferghana	1 820,6	113,6
Khorezm	2 238,2	130,2
Tashkent city	9 367,0	110,4

In terms of construction works per capita in January-December 2021, the city of Tashkent took the first place - 9,367.0 thousand soums (or 110.4% compared to 2020), followed by Navoi, respectively. — 4,961.4 thousand soums (or 113.0%), Bukhara - 3,757.0 thousand soums (or 109.9%), Jizzakh - 2,152.0 thousand soums (or 113.2 %), Syrdarya - 3,314.6 thousand soums (or 114.8%) and Tashkent regions - 3,121.7 thousand soums (or 113.0%).

Table 4. Indicators of attracting funds from International Financial Institutions to finance housing development programs (million US dollars)[6]

№	International Financial Institutions	Total	Including:					Direction of Funds
			2017 year	2018 year	2019 year	2020 year	2021 year	
	Total:	**1 280,0**	**218,0**	**469,0**	**393,0**	**100,0**	**100,0**	
1	Asian Development Bank	500,0	100,0	100,0	100,0	100,0	100,0	to the village houses construction
		200,0	-	100,0	100,00	-	-	to the multi-apartment construction houses
2	Islamic Development Bank	300,0	113,0	94,0	93,0	-	-	to the village houses construction
3	Kuwait Fund for Arab Economic Development	30,0	5,0	25,0	-	-	-	to the infrastructure of rural massifs construction
4	Saudi Development Fund	50,0	-	50,00	-	-	-	to the village houses construction
5	Turkey's "Ziroat" State Bank	200,0	-	100,0	100,00	-	-	to the multi-apartment construction houses

Also, it was determined that the heads of the Council of Ministers of the Republic of Karakalpakstan, the heads of the regions and the Tashkent city administrations will be personally responsible for the timely commissioning of low-cost multi-apartment houses, external engineering and communication networks, infrastructure facilities, the improvement of areas, as well as the placement of citizens in apartments.

The Ministry of Finance of the Republic of Uzbekistan, together with the Asian Development Bank (hereinafter – ADB), is preparing the project "Expanding the mortgage market of Uzbekistan", which provides for the provision of mortgage credit resources for JSCIB "Ipoteka-bank", JSCB "Asaka-bank", the ADB and JSCB "Uzsanoatkurilishbank", as well as in accordance with Table 3, the issue of attracting the loan of the Turkey State bank - "Ziroat" is being developed.

In the Decree of the President of the Republic of Uzbekistan of October 23, 2017 "On additional measures for the effective implementation of the program for the construction and reconstruction of affordable multi-apartment houses in cities for 2017-2020" No. PQ-3350 in order to keep the amount at the level of 25 percent and to prevent the facts of abuse in the distribution of apartments by floors, it was established that, in accordance with the conditions of sale of apartments to young families, residents of old houses and other categories of citizens who need to improve their housing conditions, the differentiated amount of the initial contribution will be put into practice.

Table 5. Sale conditions of apartments to young families, people living in old houses, and other categories of citizens in need of better housing conditions

Floors	Lending conditions:					
	Initial payment (%)			Interest for the first 5 years rate	Loan period	Grace period
	for 5 floor-houses	for 7 floor-houses	for 9 floor-houses			
1- floor	35	35	35			

[6] Decision PQ-3350 of the President of the Republic of Uzbekistan dated October 23, 2017 "On additional measures to effective implementation the program for the construction and reconstruction of affordable multi-apartment houses in the city for 2017-2020".

2- floor	40	40	40	7%	20 year	36 months
3- floor	30	30	30			
4- floor	25	25	25			
5- floor	20	20	25			
6- floor		15	20			
7- floor		10	20			
8- floor			15			
9- floor			10			

Conclusion and suggestions

From the information in the above table, it can be concluded that the terms of sale to young families, residents of old houses and other categories of citizens who need to improve their housing conditions are set for a period of 20 years, taking into account the well-being of our population, and that the initial contribution is not required.

The introduction of a preferential interest rate lower than the refinancing rate of the Central Bank and the setting of a 36-month period ensure a positive result of the reforms. At the same time, allotment of land areas for the construction of affordable multi-apartment houses is carried out by the Council of Ministers of the Republic of Karakalpakstan, regional and city hokims based on the orders of "Uzshakhar Qurilish Invest" LLC and participating commercial banks only in the areas where the demand is high among the population.

As a result of the conducted research, the following scientific and practical recommendations were developed:

- *firstly*, to improve the monitoring of the work carried out in the regions and districts regarding the provision of affordable housing to the population in the regions of our republic;

- *secondly*, to ensure the continuous operation of the commissions established under the authorities to provide the population with affordable housing and to reduce the number of required documents;

- *thirdly*, studying foreign experiences in providing the population with affordable housing and paying attention to the issue of extending the loan term;

- *fourthly*, to establish a separate department in regional authorities to provide the population with affordable housing and to form a base of the population's requirements for housing;

- *fifthly*, to ensure a decrease in the cost of model houses built at the expense of optimization of costs of construction-contracting organizations for construction materials and items.

In addition, the affordability of houses is achieved due to the provision of tax, customs relief and other benefits for program (contractor) participants.

In addition, the affordability of houses is achieved due to the provision of tax, customs relief and other benefits for program (contractor) participants.

In conclusion, it should be said that the social well-being of our population will increase as a result of the fair policy of the President, economic and social support of the population, and wide-scale reforms to provide the population with affordable housing.

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Issue Article

Farhod Abdiraimovich Usmanov
Chirchik Pedagogical University
Doctoral student, Department of History
Republic of Uzbekistan
farhod.usmanov.1988@mail.ru

HOMELESSNESS OF CHILDREN IN UZBEKISTAN AND ITS THEORETICAL FOUNDATIONS

Abstract: *In the modern world community, homelessness of children poses a serious threat to humanity. In order for every nation to be able to build a great future, it must first of all be able to give a worthy education and upbringing to the young people who are its future masters. A state capable of providing young people with a decent lifestyle and education will lay the foundation for their great future.*

Various changes and events in different periods of human history have led to the neglect of children and the exclusion of parents from the care of the state. In particular, after the 1917 revolution in Uzbekistan, child homelessness increased as a global social threat, mainly due to children in the central regions of Russia. This article provides information about the history of homeless children in Uzbekistan.

Key words: *homeless children, patronage, minority, orphanage, children's receptions, children's institutions, guardianship.*

Language: *English*

Citation: Usmanov, F. A. (2022). Homelessness of children in Uzbekistan and its theoretical foundations. *ISJ Theoretical & Applied Science, 07 (111),* 177-181.

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Scopus ASCC: *3300.*

Introduction

After 1917, the colonial states, including Uzbekistan, began to hope and believe in independence, and political activity began. However, as a result of the political maneuvers of the Soviets, dependence was abandoned and the expected changes in the social life of the population did not occur. Moreover, various reforms carried out by the Soviets without much thought adversely affected the standard of living of the population and aggravated the situation.

In such a situation, the standard of living of the population has significantly decreased, the ability to educate and take care of their children has deteriorated. As a result, children remain outside parental control and become street children, homeless children or street children. Due to the fact that these street children have become a common occurrence in the daily life of the population, and the negative consequences of the emergency have become apparent, the authorities have taken appropriate measures.

Literature Review and Methodology of Research

When writing this scientific article, the principles of historicity and objectivity, historical and comparative, analysis, synthesis, chronological methods are widely used.

Created in the Soviet period from 1917 to 1991 by K. Fozilkhodzhaev, A. Almatinskaya, A. Avdeeva, A. A. Chernyshev, A. I. Ostrovsky, A. Khalikov, G. Maryanovsky, P. I. Lyublinsky, M. I. .Levitan, V.I. Kufaev, L.M. Vasilevsky and many scientists[1-11] and A.N.Rasulov, A.A.Ermetov, M.G.Rakhmatov, N.A.Rezhabboev, H.K.Yuldashev, F.Atabaev, A.A.Golovanov and many other scientists created after 1991 [12-19] their scientific works contain information and statistical reports on some aspects of homelessness, delinquency and delinquency among children and minors.

In these works, individual aspects of the subject are explored as a separate topic. In particular, A. N. Rasulov showed the famine of 1917-1924, its causes, the negative impact on the life of the population, and in this process the courageous sacrifices of the Uzbek people in relation to the evacuated children[20].

The dissertation of M. Rakhmatov analyzes the features of the famine in Uzbekistan in 1917-1924, its causes, the problems of famine in the Fergana and Samarkand regions, the activities of the Commission to Combat Famine [21], In his dissertation, N. A. Rezhabboev analyzed the food problems in Turkestan in 1917-1924, the food reform carried out by the Bolsheviks, the activities of the Soviet government to overcome the food shortage, and the introduced criteria for food distribution[22]. A.A. Yermetov also provided information on the direct responsibility of the police for the neglect of children in 1925-1991, the efforts of law enforcement officers in this topic[23].

Results and Discussion

Today, street children are one of the most global problems facing the world community, and the United Nations celebrates April 12 as the International Day for the Elimination of Child Abuse in 135 countries. [24]. In some countries, including Austria, January 31 has been celebrated annually as "Homeless Day" since 2009 at the initiative of the Jugend Eine Welt Society[25].

The United Nations has also made significant efforts to protect the rights of the child, and the 1989 Convention on the Rights of the Child is of paramount importance and in accordance with Articles 43-45, the UN Committee on the Rights of the Child, consisting of 10 experts, has been established. The experts shall be elected by the States Parties to the Convention for a term of 4 years (with the right of re-election), taking into account the fair geographical distribution and the general legal system[26]. The term neglected child has been defined by these experts as "children who have fled the family for reasons such as poverty and violence and have become homeless on the streets." It was also emphasized that "mainly children who have run away from their families and become child homelessness are children from low-income families who have been forcibly relocated to other areas and who have suffered from natural and war disasters."[27]

1917-1945 Child homeless or neglect in Uzbekistan was formed on the basis of various causes and factors. Imperialist wars of 1914-1919, civil war of 1918-1920, poverty and famine of the Volga region of 1921 [28], various failed reforms, the arrival of foreign children in Uzbekistan, economic and cultural reforms have led to various levels of problems formed among the population, increasing the neglect of children in the local population.

More than 2 million Russian citizens were killed and nearly 10 million wounded in World War I, and 2.5 million homeless children were formed in the country. health authorities and various community workers. Representatives of various fields have put forward theories such as child abandonment, financial need, lack of upbringing, and poor mental health of young children based on their work on child neglect. According to the classification of neglected children, they are divided into groups such as orphans, helpless children, abandoned children, vulnerable children, refugee children, children of famine, children who are victims of military operations [30].

During the Russian Empire, living standards declined and various famines occurred. The Great Famine of 1921–1923 was the largest. By the end of 1921, the famine in the RSFSR numbered 37,210,000 [32], 900,000 people had been relocated to fertile areas, and at least another 600,000 had left there independently. The presence of children among these displaced people and their struggle to survive alone without adequate conditions has led to a real sense of neglect. The general social status of neglected children in the RSFSR in 1921 was 70% working, peasant, 20% self-sufficient and 10% of other strata of the family [34].

Material assistance in the prevention of neglect of children brought from starving areas is a measure to prevent primary neglect. As of November 22, 1921, 15,731 people were taken out of starving areas, of which 6,778 were children. Regular weekly and monthly hunger strikes were organized: 108,811,507 rubles in Ferghana, 14,490,032 rubles in Andijan, and 17,769,935 rubles in Samarkand. etc[35]. After 1921, 2,740 children were admitted to the Syrdarya region, 4,000 were admitted to the Samarkand region, in addition, 1,776 children were admitted individually in Samarkand, 278 children in Kattakurgan, 687 children in Jizzakh were covered by children's institutions[36], while while in Turkestan there were 387,018 representatives of the hunger statistics on 07/01/1923, in fact more than 500,000 people who were in the spring of 1922 in the village of Arivan, Kokand district, 12,000 people out of 18,000 of the population were exterminated. On May 1, 1923, out of 23,000 people from the Volga region, 12,000 were really orphans and half-orphans, 525,668 from the representatives of the famine, 42,000 were taken under the care of oyo MK, 8,000 from the representatives of the famine[38].

In the RSFSR, as a result of the Civil War and foreign military intervention, about 4 million neglected, uncontrolled children were formed[39], by the autumn of 1921 the total number of starving children reached 5 million 798 thousand[40]. Turkestan embraced a total of more than 500,000 of their parts[41]. A.N. According to Rasulov, in the areas of the Central Famine of 1921-1923, eating of children by parents, that is, cannibalism, also formed, two cases in the Samara province and one case in Tatarstan were recorded as examples[42].

1921 in the RSFSR, the main process in the fight against child neglect, if in famine countries to save children from death, 1922 is the method of struggle to eliminate the consequences of hunger and thereby re-educate children, find parents, switch to the upbringing of Topshire work. In 1923, in turn, the identification of neglected children and their pedagogical, psychological and other characteristics began to take place on educational grounds[43]. For this purpose, In 1924, Zinoviev, chairman of the Turkestan Society for Helping Children, made a special appeal to the population to solve the problem of child neglect[44].

The fact that child neglect affects the whole of society has also contributed to the development of scientific research on this issue. The theory put forward by N. K. Krupskaya, P. P. Bolonsky, N. N. Iordansky and other scientists of the RSFSR that the factor of neglect of children is associated with mental retardation quickly led to mass starvation, epidemics, the First World War, the Civil War and social problems. for example [45]. Z. Linina, who published the book "Homeless Child" in 1926, notes in her work that the spread of capitalism was also the cause of child neglect. In his opinion, capitalism, in turn, made it common for various economic reforms to increase the value of money over the value of a person, leaving children hungry or not helping them when they need help [46]. As a result, he lived in the Caucasus. After the whites shot his father, an acquaintance of his mother went home to Tbilisi (Georgia), where his mother died of typhoid fever[47], with 600 homeless children living in an abandoned place in Tashkent according to their own laws[48].

Orphans left without parents who arrived in Uzbekistan are forbidden to send them by decision of the Central Reevacuation, caused by the absence of recipients. In 1924, there were 3,000 such children in the orphanages of the Pedagogical Academy, 4,000 in nurseries, markets and vocals, 2,000 in a total of 9,000 children who were employed in various temporary jobs. The reason for the need to feed and help them without waking up again on cold winter days is the increased costs.[49].

1925 According to A. Puchkova (the person responsible for childcare), there were 150 children left without care in Samarkand, 600 in Khorezm, 200 in Ferghana, 1,340 in Tashkent, 100 in Zarafshan, and the rest of the regions did not provide information[50].

Children on the street can be divided into two broad categories. The first category is children who come to the street on their own, who have not yet entered the criminal street and spend their lives on the street in a snowstorm, and the second category are criminal or so-called prone children, which account for most of 99%. The second group fled, no matter how many children were sent home, the kidnappers on the street were engaged in violence. The educators of the education system did not have the strength to bring them back to education. During the reporting period, 72 neglected children were returned to the land and 1,170 rubles, 41 kopecks were financed. Parents of children were found by relatives and provided assistance to local authorities during the flood[51].

1924/25 for child care and legislation 3,279 children, peasant children 1,581, children from working families 583, children from working families 292, children from a Hunarmand family 573, children of free professions 345 people, depending on age 4-7 young people 208, 8-11 young people 505, 12-13 young people 1,624, young people aged 14-16 719, Russians by nationality 1,774, by nationality 21, Tatars 491, Armenians 62, Uzbeks 290, Germans 42, Poles 33, Greeks 8, Kyrgyz 458, Iranians 61, Moldovans 39, of which 827 people from the countries of the Turkish nation, 2442 from other countries filled out the questionnaire. 2,685 orphans, 448 half-orphans, whose parents are unknown, where they were 146 people. Of the children in foster care 450, 50 in foster care, 335 for work, 380 children were sent home and returned to an orphanage 380, 150 to orphanages 880, 880 to orphanages in Spain, 5 to an orphanage in Krupsk, 300 to an orphanage house in Krupsk (220 boys, 80 girls), 225 in the nursery[52].

The spread of neglected children aggravated the violation of their rights, and they exploited 15-year-old Zakir Kurmakaev (neglected) for 2 years for free [53], as they were exploited by hard-working gangster owners [54]. Among the neglected children of this period were “Whose toffee?”, “On the street”, “Whose cigarette?”, “Poor children”, “Hot bun”, “Give”, “Whose water?” Popular songs like[55].

The cause or elimination of child homelessness depended primarily on material support, and the Soviet government further complicated the situation by shifting social problems onto the shoulders of the territorial authorities. Funding was very scarce: 486 children in 7 children's institutions in Samarkand, 80 in Muslim orphanages in the remaining 4 districts and 70 in Orphanage No. 2[56], only 950 rubles were collected from voluntary donations, and the only source of income was 13,108.82 rubles from the lottery[57]. In Tashkent 1748, Tashkent region 427, Mirzachul region 163, in total 2338 homeless children are covered by children's institutions, and in Tashkent there were 600 more homeless children. In winter, they multiplied even more, going from the garden, the parks to the tea house, to the market or to the shelter from snow and rain, stuffed outside into the oven, and some lying in impossible garbage cans. They spent their money on cannabis or similar drugs, alcohol and gambling at night[58].

Also during World War II, child neglect was in a very bad state. In the Surkhandarya region, 4 orphanages in 1944 numbered 360 contingents, and in the second half of 1945, 15 orphanages were planned for 2070 children. Orphanages in Termez, Baysun, Sariosi and Sherabad districts are in poor medical

condition, while orphanages in Termez 7-14, Baysun 1-16 and Sherabad 10 are very dirty, with skin and other diseases. In the 1st quarter of 1945, 2883 kg of animal fat was given to orphanages instead of 5080 kg, and in April-May, instead of 2580 kg, 1282 kg of animal fat were given, and in this order everything was smaller [59]. 15 orphanages for 2070 children are provided with 85 beds, tapchans, 126 tables, chairs, 138 benches, 14 bedside tables, 18 lockers. There were not enough clothes for boys for 1,000 people, and orphanages No. 16 in Baysun and No. 10 in Sherabad lacked ties, kitchen utensils and crockery[60].

In Tashkent in 1944 there were 2006 cases of homeless children, 32 deaths, in 1945 916 cases and 17 deaths. This was due to poor food supply, poor working conditions and poor living conditions: 162 children fled from orphanages in Tashkent in 1944 and 170 in the third quarter of 1945. [61] 241 children ran away from home. For 9 months, 36 children ran away from orphanage No. 3 [62]. This is a clear indication of the causes of child neglect during this period.

Conclusion

Homelessness of children has become a global problem today, and the world community is taking many measures to address and prevent it. The actions taken by the United Nations on this issue and by the legislature confirm our point of view.

With the establishment of Soviet power and the strengthening of their influence on the life of the country, the problem of homeless children, along with social problems, became more complicated. Various influences and reasons, in turn, increased the number of street children and had a negative impact on the life of the population. Based on the above, the following conclusions can be drawn:

- homelessness of children remains a global problem in the last century and today;
- Various reforms of the Soviet era, including the land and water reform, the food allocation and others, reduced the standard of living without changing it;
- Children's homelessness in the central regions of Russia filled up the foreign land of Uzbekistan under the pretext of a union state, as a result of which the population had to self-sacrifice for the sake of the homeless, despite the difficult living conditions;
- Insufficient financial support from the Soviets, the inefficient operation of childcare facilities, and insufficient support for guardianship and patronage systems also contributed to the growth of child homelessness.

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Issue Article

G. Kh. Bakieva
TFI
Candidate of the Department of Finance
gulya_2904@bk.ru

N. V. Yuldasheva
TFI
Scientific supervisor
PhD., Acting Associate Professor of the Department of Finance

FOREIGN EXPERIENCE IN THE ORGANIZATION OF PUBLIC PROCUREMENT: FEATURES, LESSONS FOR UZBEKISTAN

Abstract: *This article provides an overview of public procurement systems in foreign countries, in particular, examines the institutional, organizational and legal mechanisms of the public procurement system in foreign countries, the role of public procurement in solving important strategic tasks of budget and corporate funds management, as well as in increasing the level of competition between entrepreneurs.*

Key words: *public procurement, auction, rating assessment, electronic store, centralized model, decentralized model.*

Language: *Russian*

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ЗАРУБЕЖНЫЙ ОПЫТ ОРГАНИЗАЦИИ ГОСУДАРСТВЕННЫХ ЗАКУПОК: ОСОБЕННОСТИ, УРОКИ ДЛЯ УЗБЕКИСТАНА

Аннотация: *В данной статье проведён обзор систем организации государственных закупок в зарубежных странах, в частности рассмотрены институциональные, организационно-правовые механизмы системы государственных закупок в зарубежных странах, показана роль государственных закупок в решении важных стратегических задач управления бюджетными и корпоративными средствами, а также в повышении уровня конкурентной борьбы между предпринимателями.*

Ключевые слова: *государственные закупки, аукцион, рейтинговая оценка, электронный магазин, централизованная модель, децентрализованная модель.*

Введение

Система государственных закупок дифференцируется в зависимости от специфики различных стран мира, можно сказать, что у каждого государства свой подход, который регламентируется принятием нормативных актов.

Внедрение системы государственных закупок в Республике Узбекистан происходил поэтапно. Год за годом в силу вступали законодательства, которые упрощали процесс осуществления закупочных процедур, при этом контролируя все этапы их проведения.

Система государственных закупок в Российской Федерации

Система государственных закупок в Российской Федерации имеет многогранное значение на экономику. По данным исследователей через систему государственных закупок ежегодно заключаются договора на сумму больше триллиона рублей.

Рис 1. Законы, регулирующие систему государственных закупок в России

На основании вышеупомянутых законов, заказчики делятся на несколько уровней:

- муниципальные. Мелкие заказчики, это те которые редко участвуют в закупочных процедурах;
- региональные. В отличии от муниципальных заказчиков, региональные чаще участвуют в закупочных процедурах, так как имеют большую часть бюджетных средств.
- федеральные. Федеральные заказчики наиболее часто участвуют в закупочных процедурах, так как их потребности в разы выше предыдущих.

Система государственных закупок в Казахстане

Вместе с тем интересен опыт организации системы государственных закупок в Республике Казахстан. Система государственных закупок в Казахстане вобрала в себя опыты различных стран мира, создав мощную и важнейшую структуру, которая положительно сказывается на экономике страны. Основным нормативно-правовым документом регламентирующим систему государственных закупо является Закон «О государственных закупках».

Главной особенностью системы государственных закупок в Казахстане является прозрачность осуществления закупочных процедур, а также применение балльного метода. Начиная с 2020 года Правительство Казахстана приняло решение, что необходимо ввести чёткий контроль не только за проведением закупочных процедур, но и также за всеми участниками. Другими словами, те поставщики которые не соблюдают все условия по договору, получая низний балл, вносятся в реестр недобросовестных подрядчиков. Данные меры были предприняты для того, чтобы повысить уровень оказываемых услуг организациям, сэкономив бюджетные средства. По мнению экспертов только за 2021 годы было сэкономлено более миллиарда казахстанских тенге, что позволило инвестировать эти денежные средства на повышение уровня благосостояния страны.

Система государственных закупок в США

Если сравнивать системы государственных закупок различных стран мира, то можно с уверенностью сказать, что система государственных закупок в США является самой отлаженной. Несмотря на то, что страна претерпевает всяческие перемены, как в экономических, так и в политических вопросах, система государственных закупок усовершенствуется год за годом.

Важно упомянуть, что именно США стала одной из первых стран, которые начали практиковать систему государственных закупок в 1792 году.

В отличии от Республики Узбекистан, в США контролирующими органами системы государственных закупок являются Министерство Обороны и Министерство Финансов. Для каждого штата имеются свои правила государственных закупок, учитывая потребности тех или бюджетных организаций.

Система государственных закупок в Южной Корее

Подход правительства Южной Корее к системе государственных закупок очень жёсткий по отношению к предпринимателям. Если в других странах существует балльный метод, где за каждую ошибку снижается балл у поставщиков и подрядчиков, то в Южной Корее они просто блокируются.

Главной платформой проведения государственных закупок служит KONEPS (Korean on-line electronic procurement service).

Важно отметить, что система государственных закупок на территории Южной Кореи начала действовать с 2002 года и уже в 2003 году получила награду.

Необходимо отметить, что принимать участие в системе государственных закупок могут только отечественные производители товаров и услуг, пройдя регистрацию онлайн на портале.

Система государственных закупок в Великобритании

Великобритания является страной, в которой система государственных закупок не менялась, со дня принятия основного закона. Но после выхода страны из стран ЕС, правительство приняло ряд решений, которые в корне изменили систему госзакупок. Так, например, тендер длится до 53 дней. Данные меры были направлены на улучшение качества оказываемых услуг бюджетным организациям, а также формирование ценовой политики на соответствующие товары и услуги. Главным контрольным органом, регулирующим процесс гос закупок является Кабинет Министров.

Если в других странах, в процессе закупочных процедур могут участвовать компании различных стран, то в Великобритании предпочтения отдаются национальным предпринимателям с высокой оценкой качества оказываемых услуг.

Система государственных закупок в Республике Узбекистан

Рассматривая зарубежный опыт организации и проведения системы государственных закупок, можно сказать, что в Республике Узбекистан действует налаженная и чёткая система.

Учитывая, что в Республике Узбекистан сравнительно недавно зародилась система государственных закупок, уже немало было достигнуто в данном направлении.

Из года в года правительством Республики Узбекистан принимаются ряд законодательств, который упрощает систему проведения закупочных процедур, при этом делая её прозрачной.

В частности, было принято Постановление Кабинета Министров Республики Узбекистан №276 от 20.05.2022 года «Об утверждении положения о порядке организации и проведения процедур, связанных с осуществлением государственных закупок». В данном Постановлении отмечается, что главным уполномоченным органом в сфере государственных закупок является Министерство Финансов Республики Узбекистан.

Также было принято решение уполномоченными органами ввести «рейтинг» поставщиков и подрядчиков, которые непосредственно принимают участие в процессе закупочных процедур. Эти меры помогут выявить недобросовестных подрядчиков, а также повысить уровень оказываемых услуг организациям.

Важно отметить, что на сегодняшний день количество аннулируемых договоров резко сократился по сравнению с 2021 годом.

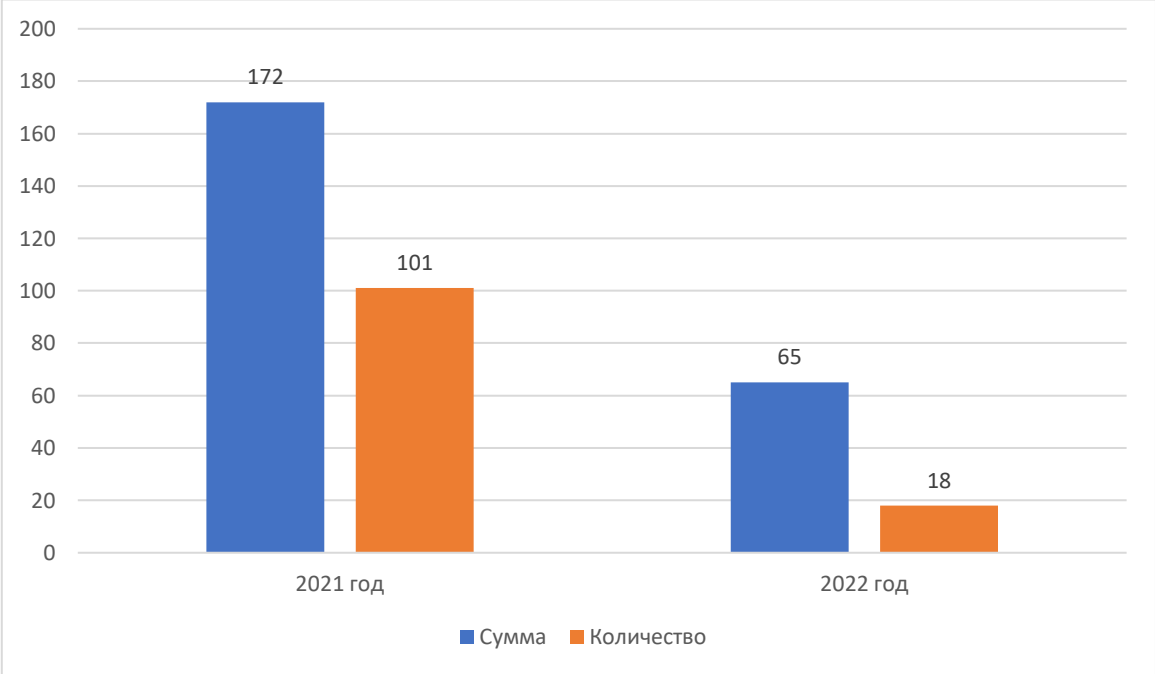

Рис 2. Количество и сумма аннулированных договоров, заключенных посредством закупочных процедур за 1 полугодие 2021 год и 2022 год соответственно (млн.сум).

Сравнивая системы государственных закупок Германии и Республики Узбекистан, можно увидеть, что правительство Республики Узбекистан отдаёт предпочтение только отечественным производителям товаров, работ и услуг, допуская их к участию на электронных торгах.

На сегодняшний день перед правительством Республики Узбекистан стоят ряд задач в области государственных закупок. Одной из них является ценовая политика. Предлагается внедрить такую базу данных, где будут учитываться соответствие цены качеству товара. Те, поставщики, у кого цены будут завышены, будут получать соответствующие баллы автоматически.

Также для повышения уровня грамотности бюджетных заказчиков, было принято проводить всевозможные тренинги и семинары, со стороны уполномоченных органов. Эти и другие меры направлены на улучшение получаемых услуг, а также экономии бюджетных средств.

Ниже рассмотрим один из видов закупочных процедур- аукцион. Объявление о проведении аукциона должно быть размещено не менее, чем за 5 дней до даты определения победителя. В течении этого времени поступают предложении о понижении стартовой цены. Тот продавец, кто предложил наименьшую цену, удовлетворяющую характеристикам требуемого товара, побеждает. После заключения договора, товар должен быть доставлен в течении 7 дней до дверей заказчика.

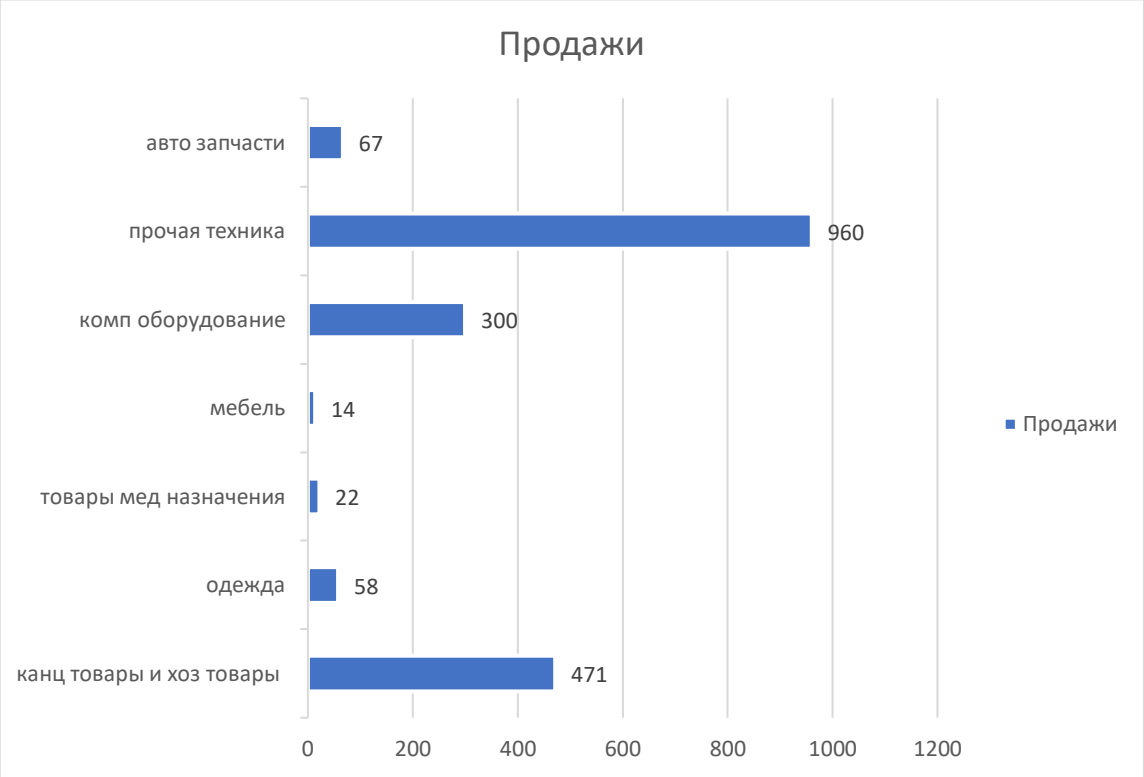

Рис 3. Зарегистрированные договора, посредством аукциона за 1 полугодие 2022 года (млн.сум)

Как видно из рисунка, все необходимые товары для деятельности организации закупаются посредством аукциона. Одним из плюсов проведения аукциона на понижение стартовой цены заключается в экономии бюджетных средств.

Помимо аукциона на понижение стартовой цены, одним из видов закупочных процедур есть электронный магазин.

Отличительной особенностью электронного магазина от аукциона является предмет договора. То есть, через электронный магазин могут также закупаться услуги бюджетными заказчиками, помимо товаров.

Заказчики на специальном портале формирует запрос товара с указанием статьи использует механизм запроса цен. В течении 48 часов с момента направления порталом предложения об участии в запросе цен. После этого формируется договор. Товар должен быть предоставлен, либо услуга должна быть оказана от 5 до 15 дней.

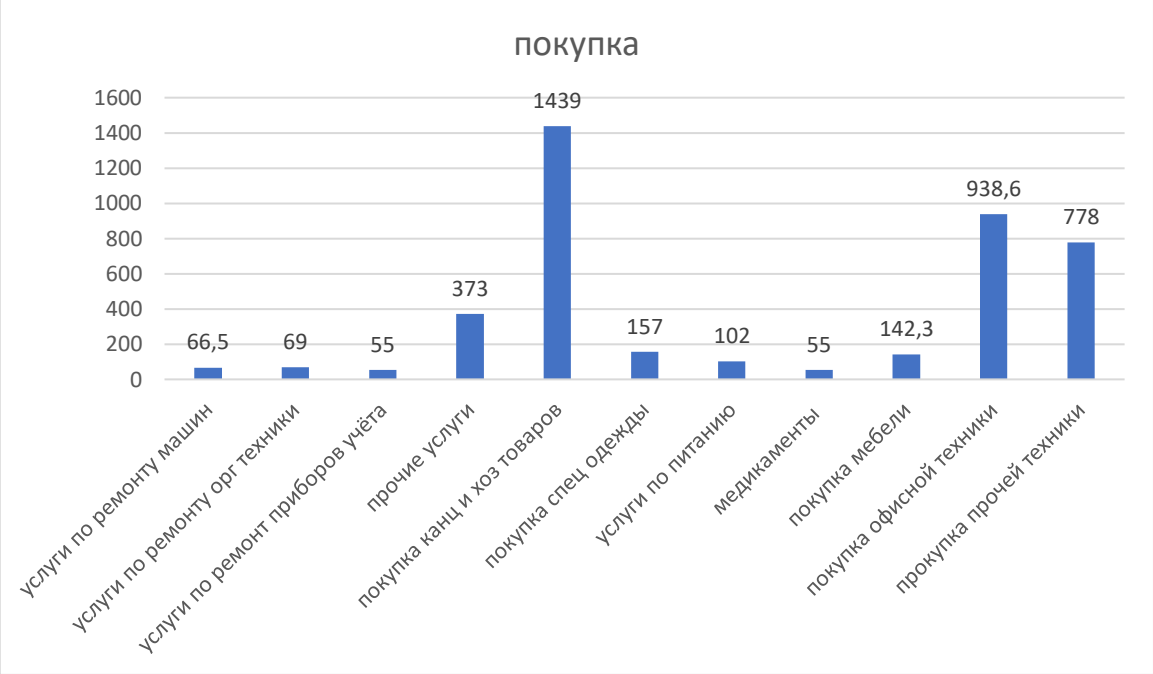

Рис 4. Зарегистрированные договора, посредством электронного магазина за 1 полугодие 2022 года (млн.сум).

Как видно из данных рисунков, можно видеть, что система государственных закупок развивается и всё больше договоров заключается посредством электронных закупочных процедур.

Каким образом система государственных закупок влияет на государство?

1. Экономия бюджетных средств. Если рассматривать на практике каждый вид закупочных процедур по отдельности, то главной целью является снижение стартовой цены, не занижая качество товара или оказываемой услуги. Выигрывает тот поставщик либо подрядчик, кто предложил наименьшую цену из всех заявлений предложений.

2. Конкурентная борьба. Как описывалось выше во всех странах, ведётся рейтинговая/балльная система по поставщикам и подрядчикам. Те предприниматели, у кого оценка снижается, вносятся в реестр недобросовестных подрядчиков. Тем самым не имеют права участвовать в закупочных процедурах.

3. Цифровизация. Во многих странах мира развивается электронная система, то есть происходит цифровизация экономики. Система государственных закупок переняла опыт зарубежных стран и стала неотъемлемой частью цифровой экономики Узбекистана. Например: участвовать в процессе закупочных процедур могут не только предприниматели одного региона, но и всей Республики в целом онлайн.

4. Целевое направление бюджетных средств. Благодаря принятому законодательству, теперь стало возможным отслеживать весь процесс закупочных процедур. На практике, прежде чем выставить объявление о необходимых товарах и услугах, нужно заполнить план график закупок с указанием статьи расходов, а также кода товара либо услуги.

5. Снижение уровня коррупции. Законодательством категорически запрещено заключать договора посредством электронных закупочных процедур между родственниками.

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Issue Article

Murodjon Abdusalimzoda Samadiy
Yangiyer branch of Tashkent Chemical Technological Institute
Associate Professor of the Chemical Technology of Inorganic Substances,
Deputy Director on Science and Innovation
121000, Republic of Uzbekistan, Yangiyer, Tinchlik str. 1.
samadiy@inbox.ru

Jasur Bozorovich Makhmayorov
Yangiyer branch of Tashkent Chemical Technological Institute
Assistant, Head of the Department for Youth Affairs, Culture and Education

Bakhrom Azimjonovich Makhkamov
Yangiyer branch of Tashkent Chemical Technological Institute
Assistant, Scientific secretary

Sherzod Mamarasulovich Qodirov
Jizzakh Polytechnic Institute
Assistant,
130100, Republic of Uzbekistan, Jizzakh, st. I.Karimova, 4

Jasur Baykaraevich Farmonov
Yangiyer branch of Tashkent Chemical Technological Institute
Assistant

STUDY OF THE KINETIC CHARACTERISTICS OF THE PROCESS OF OBTAINING ZINC SULFATE

Abstract: *In this article, studies were carried out to substantiate the kinetic characteristics of the process of obtaining zinc sulfate from the zinc concentrate of the Khandiza deposit. For this, the effect of temperature and duration of the process of autoclave extraction of zinc in a 30% solution of sulfuric acid at a ratio of Zn:H_2SO_4=1:1.05 was studied. The variables were temperature 65, 70 and 75°C and the duration of the leaching process 60, 90 and 120 minutes.*

Key words: *zinc sulfate, sulfuric acid, zinc concentrate.*

Language: *Russian*

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Scopus ASCC: *1604.*

ИССЛЕДОВАНИЕ КИНЕТИЧЕСКИХ ХАРАКТЕРИСТИК ПРОЦЕССА ПОЛУЧЕНИЯ СУЛЬФАТА ЦИНКА

Аннотация: *В данной статье проведены исследования по обоснованию кинетических характеристик процесса получения сульфата цинка из цинкового концентрата месторождения Хандиза. Для этого изучено влияние температуры и продолжительности процесса автоклавного извлечения цинка в 30% раствор серной кислоты при соотношении Zn:H_2SO_4=1:1,05. Переменными параметрами были температура 65, 70 и 75°C и продолжительность процесса выщелачивания 60, 90 и 120 минут.*

***Ключевые слова**: сульфат цинка, серная кислота, цинковый концентрат.*

Введение

Сульфат цинка (гептагидрат сульфата цинка $ZnSO_4 \cdot 7H_2O$, цинковый купорос) применяется в качестве микроэлемента, как минеральная добавка к кормам, при производстве минеральных красок, как отбеливатель для бумаги, при производстве различных лекарств, в металлургии, гальванотехнике, производстве дрожжей, пива, кожаных изделий, пропитки дерева [1-4].

Сфалерит является одним из главных сырьевых источников для получения цинка, который обычно находится в сульфидном состоянии. Из сфалерита выплавляют металлический цинк, попутно извлекают Cd, In, Ga и другие ценные компоненты [5]. Сфалерит используют в лакокрасочном производстве для изготовления цинковых белил, применяют для получения латуни. Большое значение имеет получение из природного сфалерита химически чистого ZnS, активированного Ag, Cu, который применяют для изготовления люминофоров, различных светосоставов и светящихся красок. Кроме того, природный сфалерит используется в качестве фотокатализатора разложения красителей в воде [6-8].

Сульфат цинка производится в сочетании с процессами производства других цинксодержащих продуктов. Его получают путем обработки минеральных руд, золы цинка и переработанных продуктов, содержащих металлический цинк или оксид цинка, серной кислотой с последующей фильтрацией, кристаллизацией, измельчением и упаковкой [9-12].

Мировое производство цинка в 2019 году оценивалось в 13 миллионов тонн, что на 4% больше, чем в 2018 году. Заметный рост производства цинка произошел в Австралии, Китае и Южной Африке [13-16]. В Австралии в 2017 году был открыт проект хвостохранилищ Woodlawn и значительный рост добычи произошел на рудниках Дугалд-Ривер и Леди Лоретта, а также в двух проектах по переработке хвостов, запущенных в 2018 году. В Южной Африке производство увеличилось на руднике Гамсберг, который был введен в эксплуатацию в конце 2018 года. По данным Международной исследовательской группы по свинцу и цинку мировое производство рафинированного цинка в 2019 году оценивалось в 13,49 млн. тонн, а потребление в 13,67 млн. тонн, в результате чего дефицит между производством и потреблением составлял примерно 180 000 тонн рафинированного цинка [17-18]. Внутреннее производство цинка снизилось в 2019 году частично из-за закрытия рудника Pend Oreille в штате Вашингтон после того, как текущие запасы были исчерпаны. Рудник был вновь открыт в 2014 году после закрытия с 2009 года. Видимое потребление рафинированного цинка в США выросло до 5-летнего максимума в 950 000 тонн в 2019 году. Расчетная среднегодовая цена на цинк особого, высокого качества в Северной Америке снизилась на 11% в 2019 г. по сравнению с 2018 г. или на 1,25 долл. США за фунт [19-25].

Цель и методы исследования.

Цель данного исследования заключается в оценке кинетических характеристик сернокислотного разложения цинкового концентрата. Для этого учитывались результаты исследований табл. 3.1. Было установлено значительное изменение роста степени конверсии сульфата цинка при соотношении $Zn:H_2SO_4$=1:1,05, продолжительности процесса 90 минут и давлении 10 атм., которое происходит в пределах 65-75°C. При температуре выше 75°C изменение степени конверсии практически не происходит, поэтому кинетические характеристики как константа скорости реакции и энергия активации были рассчитаны именно при вышеуказанных температурных интервалах – 338; 343 и 348 К.

Рентгенофазовый анализ проводили на дифрактометре XRD-6100 Shimadzu, который позволяет проведение рентгенофазового анализа, анализа степени кристалличности, анализа напряжений, остаточного аустенита и решения многих других задач. Возможность использования любых рентгеновских трубок, соответствующих европейскому стандарту, а также широкий выбор дополнительных приставок делает рентгеновский дифрактометр XRD-6100 универсальным и подходящим для решения любых аналитических задач. Прибор обладает программным обеспечением, позволяющим осуществлять сбор, хранение, интерпретацию и обработку данных, текущий контроль состояния дифрактометра, качественный и количественный фазовый анализ и другие исследования, производить конвертацию файлов экспериментальных данных в текстовые форматы, создавать собственные библиотеки данных. Дифрактометр XRD-6100 с вертикальным θ-2θ гониометром предназначен для решения большинства прикладных и исследовательских задач [26-27].

Метод атомно-эмиссионной спектрометрии, использующий в качестве источника возбуждения атомов индуктивно-связанную плазму (ИСП). Которая представляет собой сильно ионизированный инертный газ (аргон) с одинаковым числом электронов и ионов, поддерживаемых РЧ (радиочастотным) полем. Полученная в плазме температура

десольватирует, превращает в пар и ионизирует методом масс-спектрометрии (МС) и атомноэмиссионной спектрометрии (АЭС) атомы исследуемого образца. Обычно пределы обнаружения находятся в диапазоне от менее – намограмма (МС-ИСП) до менее - микрограмма (АЭС-ИСП) на литр [29].

Рентгенофлуоресцентный анализ проводили на спектрометре Zetium. Рентгеновская флуоресцентная спектроскопия (XRF) позволяет выполнять элементный анализ разнообразных материалов, включая твердые, жидкие и порошкообразные. Спектрометр Zetium, разработанный для управления технологическими процессами, а также для исследований и разработок, стал лидером благодаря высококачественной конструкции и инновационным функциям анализа от Be до Am в широком диапазоне концентраций [30].

Результаты и их обсуждение.

Процесс сернокислотной обработки цинкового концентрата ускоряется с повышением температуры в кинетической области, далее процесс взаимодействия частиц между исходными компонентами продолжается в диффузионной области, где значительное влияние оказывает продолжительность процесса [31].

В связи с этим для описания процесса было использовано кинетическое уравнение первого порядка [32]:

$$K = 2,303/\tau \cdot \lg C/(C_0 - C_\tau) \quad (1)$$

где C_0 и C_τ – ожидаемая максимальная степень конверсии цинкового концентрата, соответственно, на начальной стадии разложения и за истекший промежуток времени (τ), К - константа скорости разложения.

Полученные данные из уравнения (1) были переведены в логарифмические значения как lg K и lg (Co-Cτ).

В табл. 1 приведены данные влияния температуры на константу скорости реакции взаимодействия цинка с серной кислотой из концентрата при 90 мин.

Таблица 1. Влияние температуры и продолжительность процесса на константу скорости реакции взаимодействия цинка с серной кислотой

Время (τ), мин.	Температура, К	Константа скорости, $K \cdot 10^{-2}$, τ^{-1}	lgK	*lg(Co – Cτ)
90	338	0,01720	-1,76448	1,10380
	343	0,01878	-1,72619	1,02119
	348	0,02074	-1,68309	0,91908
	Среднее	**0,01891**	**-1,72459**	**1,01469**

** Примечание: время взаимодействия 90 мин.*

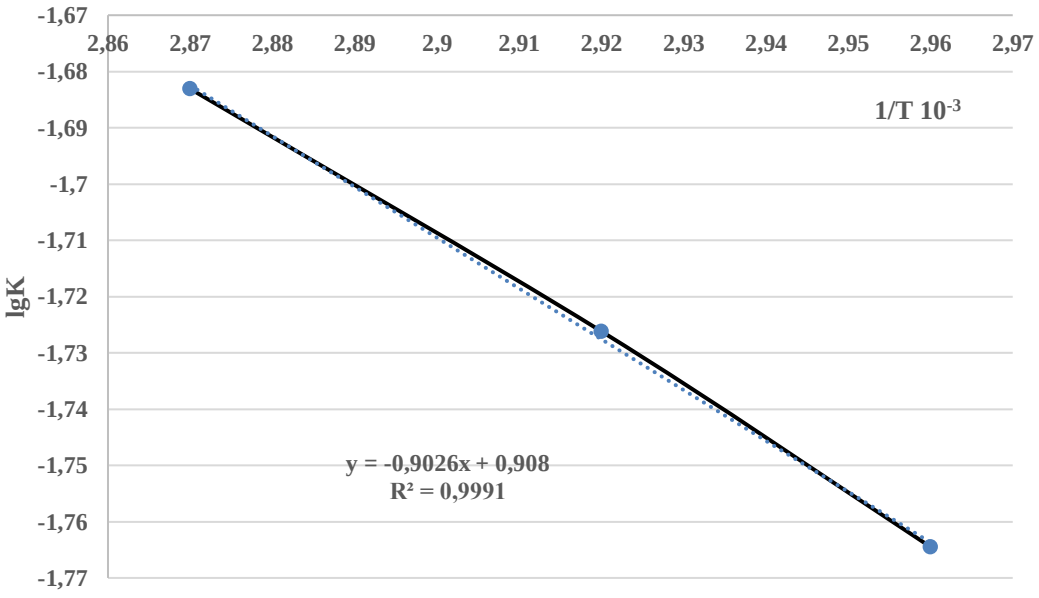

Рисунок. 1. Зависимость константы скорости от температуры

Из таблицы видно, что с повышением температуры увеличивается и константа скорости реакции взаимодействия цинкового концентрата с серной кислотой. Скачок константы скорости наблюдается в кинетической области при температуре 338, а далее - в диффузионной области с 348 К и более. Температура практически не влияет на константу скорости реакции.

На рис. 1 приведена зависимость констант скорости реакции от температуры, которая выражается прямой линией и уменьшается с увеличением значений $1/T \cdot 10^3$.

Прямолинейная зависимость lgK от τ говорит о протекании процесса извлечения цинка из цинкового концентрата по первому порядку, о чем свидетельствуют корреляционные коэффициенты (R^2).

Константа скорости реакции образования сульфата в зависимости от температуры подчиняется уравнению Аррениуса и эмпирически выражается следующими формулами:

$$K = 4{,}1721 \cdot 10^{-3} \cdot exp(4380{,}86/T\ )$$

или $K = 4{,}1721e^{\frac{-4380{,}86}{T}}$

Найденные значения константы скорости реакции извлечения цинка из концентрата использовали для определения кажущейся энергии активации (E_a) (табл. 2).

Среднее значение E_a процесса вычислено по формуле [33]:

$$E_a = b \cdot 4{,}576$$

В зависимости от температуры в пределах 338-348 К значение кажущейся энергии активации E_a цинкового концентрата составляет 4,06 и 4,71 ккал/моль или 16,97 и 19,72 кДж/моль, а среднее значение $E_{a.cp.}$ составляет 4,39 ккал/моль или 18,34 кДж/моль, соответственно.

Таблица 2. Энергия активации реакции взаимодействия цинкового концентрата с серной кислотой

Т, К	$1/T \cdot 10^{-3}$	Энергия активации		Среднее значение энергии активации	
		E_a, ккал/моль	E_a, кДж/моль	$E_{a.cp}$, ккал/моль	$E_{a.cp.}$, кДж/моль
338	2,96	4,06	16,97	4,39	18,34
343	2,92				
343	2,92	4,71	19,72		
348	2,87				

Показатели энергии активации свидетельствуют о высокой реакционноспособности цинкового концентрата. Результаты могут послужить для оценки технологичности сырья на химических предприятиях по производству цинковых солей.

Выводы.

Таким образом, расчетные данные кинетических закономерностей подтверждают выводы о реакционноспособности цинкового концентрата при его разложении с серной кислотой. Энергия активации увеличивается с повышением температуры при давлении 10 атм и соотношении $Zn:SO_4$ – 1:1,05, а константа скорости реакции концентрата увеличивается с ростом температуры при оптимальном времени взаимодействии.

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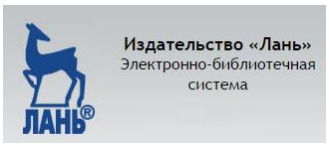

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