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QR – Issue QR – Article

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SEMIOTIC SQUARE AND BINARY OPPOSITION

Abstract: *Semiotic Square Representative of the Paris Semiotic School A.J. Designed by Graham and put into scientific use. This Lithuanian scholar also made a worthy contribution to French linguistics and semiotics. The system he developed was based on Aristotle's logical square.*

Key words: *semiotic square, a number of discipline, surface, horizontal, the contradictory attitude, vertical implantation.*
Language: *English*
Citation: Saidova, R. A. (2020). Semiotic square and binary opposition. *ISJ Theoretical & Applied Science, 02 (82),* 201-205.
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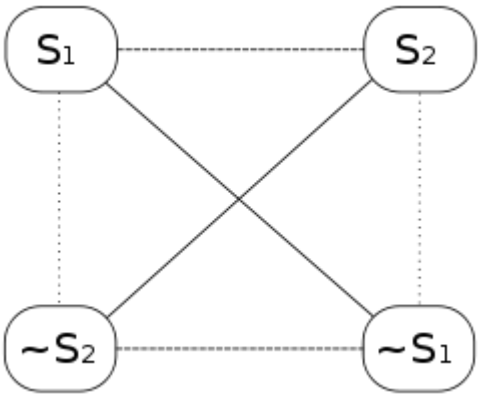
Introduction

The Semiotic Square (SS) is a universal scientific tool that can be used in a number of disciplines, including literary text analysis.



Semiotic square design was painted by A.J.Greymas

The above figure of the SS contains three types of attitude:

1) the attitude based on the inconsistency of the characters located on a flat (horizontal) surface;

2) the contradictory attitude occurred the result of diagonal signs' opposite;

3) vertical implantation or complementary response. It is a character link that defines the validity of the contradiction, indicating the conflict or the opposite between the vertical squares in the square.

Analysis

In this part, we will describe Rauf Parfi's poem "Abdulhamid Sulaymon Cho'lpon", written in 1974, in a semiotic quadratic analysis of the binary opposition, and draw some conclusions from this.

Abdulhamid Sulaymon Cho'lpon

Shu ojiz holimga shoirmanmi men.

Cho'lpon

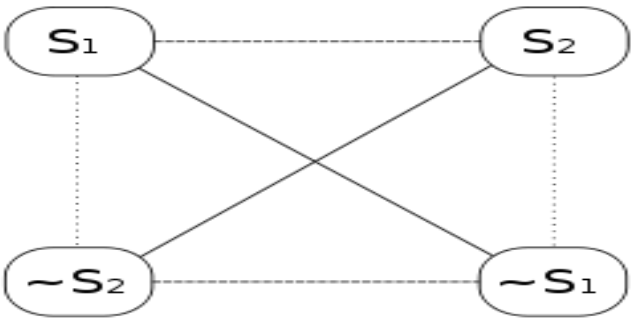
1.Ona tilim sen ruhimning qanoti,

Abutturk nafasi, Oltoy chechagi.
Xun davridan omon keldi G'iroting,
Qutlug' Enasoyning ezgu ertagi.
O'rxun bo'ylarida toshga aylanding,
Ko'klarga sanchilding, Turon bo'lding Sen.
Mangulik safarga qachon shaylanding?
Qachon bu alamga – kuchga to'lding Sen.
Yillar bahorimni uchirdi chalqib
Xun davridan omon keldi
Muzlarga ko'chirdi o'tluq yozimni.

Porloq osmoningda quzg'unlar uchdi,

1.Based on the semiotic square, firstly we try to identify the interconnected contradictions that are at the upper level of the surface, and then to reveal the essence of the dominance of the text system.

G'iroting Qutlug'
Enasoyning ezgu ertagi…



Porloq osmoningda quzg'unlar uchdi,
E voh, yog'iylaring soldi yag'moni
O'rxun bo'ylarida toshga aylanding, Ko'klarga sanchilding, Turon bo'lding Sen.

From the poetic text we draw two symbols that make up the binary opposition and place them at the top of the square. These are:

1. Yillar bahorimni uchirdi chalqib,
Muzlarga ko'chirdi o'tluq yozimni.
2. Xun davridan omon keldi G'iroting,
Qutlug' Enasoyning ezgu ertagi...

According to the drawing, the poetic part number 1 is marked with the second S_1 and the second with S_2.

Discussion

According to Semiotics experts, including Greymas, firstly the character is the product of contradiction. According to logical thinking, "sweet" definitely requires "bitter". It is impossible to imagine or evaluate "big" if it is not "small". This is the conclusion of logic. The same applies to semiotics. In order to be an interconnected contradiction, there must be an understanding that combines these two characters. The above-mentioned concept that combines "sweet" and "bitter" is taste.

Therefore, we try to analyze the contradictory characters in the poetic text about Cho'lpon, to identify the factors that create binary opposition, and to clarify the idea that interconnects these characters.

Although the poem was called "Abdulhamid Sulaymon Cho'lpon", it began with a reference to the native language (Turkish). The reading of the lyric text and its analysis suggest that it contains two artistic voices. These are:

1) roviy (lyric hero);

2) the voice of the great nationalist poet Cho'lpon.

These two voices differ in some parts of the text. For example, the voice in the first paragraph of the second sonnet in the text belongs to Cho'lpon:

Dunyo oq emasdir, yo'q, qora bardosh,
Kuyib yodimizdan keachganlar aytsin.
So'zlarida zahar, ko'zlarida tosh,
Elidan, tilidan kechganlar aytsin.

Abdulhamid Cho'lpon, Abdurauf Fitrat, and Abdulla Qodiriy have been banned from remembering and reading their books after the totalitarian Soviet system of 1937-1938. Even when it is remembered, it is mentioned by the infamous label "xalq dushmani". Although this voice belongs to Cholpon, it speaks on behalf of all progressive Jadids. According to his words, the world is "oq emas, qora bardosh" Because "oq" is trampled underfoot, and oppression is triumphant. The oppressors (colonialists) founded the kingdom of lies. A bunch of oppressed and cowardly people call "oq" instead of "qora" for the interest of their career. They have given up remembering those who have been killed for their independence. There are the "poison in the words", the "stone in their eyes" of the helpless and the wretched people. "The people who have gone away from their language and nation" are creatures of human origin, who have their own destiny and are subdued in the guise of a net, even with their own language and accustomed to speaking the invaders. Thus, the textual section on the S_1 edge of the semiotic square illustrates the great tragedies of the modern era, interacting with (paradigmatic) relations with the lyrical hero and other units narrated by the roviy.

Yillar bahorimni uchirdi chalqib,
Muzlarga ko'chirdi o'tluq yozimni.–

Lecture in S_1 forms the opposite relation to the horizontal relation with the following text unit on the square S_2:

Xun davridan omon keldi G'iroting, Qutlug' Enasoyning ezgu ertagi.

This section of the text completely overrides the view expressed in S_1. Analysis of this sign allows us to come to the following conclusions: The Turkish language survives along with their owners, had long, glorious and tragic times. There has been aggression, violence, and oppression on these languages and nations. The demons in human form did all the evil to destroy this nation. The poetic section has three interrelated characters:

1)**The period of Xun** – is one of the golden times of the Turks. At this stage in history, the fame, power, and fighting spirit of the Turks was written all over the world;

2) **G'irot** – is a legendary horse of the hero of the Alpomish, one of the rare examples of the World Epic. It was three days' journey instead of three months journey from Baysun to Kalmak;

3) **Enasoy** – is a huge river in the area where the Turks lived long ago. As these three characters are interconnected and close together, they enter a system and form a paradigmatic relationship. Within the text, a new character, larger than this one, will be created from this merger. This is a symbol of the Turkic language's vitality

2. Now proceed to the definition of the character of the diagonals on the SS. These are: also represent the opposite links between S_1 and ~ S_1, S_2 and ~ S_2. The intimacy of the S_1 and ~ S_1 contradictions in the text is in contradiction to S_1 (yillar bahorimni uchirdi chalg'ib, muzlarga ko'chirdi o'tluq yozimni), that is, the closeness of S 2 (Xun davridan omon keldi g'iroting, Qutlug' Enasoyning ezgu ertagi) so we choose another lecture that falls into a paradigmatic series.

O'rxun bo'ylarida toshga aylanding, Ko'klarga sanchilding, Turon bo'lding sen

This unit also has three primary characters that overlap and complement each other and form the basis for a single character:

1)O'rxun;

2)tosh;

3)Turon.

These characters overlap. O'rxun is one of the oldest inhabited territories of the Turkish people, after the Hun period. It naturally joins the reader's memory with the Enasoy symbol in the text itself: O'rxun-Enasoy. This is a new character that is now within the text. This unit brings together monuments associated with the names and activities of Tunyukuk, Kultegin, Bilga hoqon. In the flow of the reader, this compound enters into contact with the stone symbol and revives the memories of the ancient stone inscriptions, the ancient Turkish inscription of the Dulbarjin.

Of course, it is necessary to pay special attention to the stone symbol and to explain its connotative meaning within the fiction.

The stone, first of all, reflects the qualities of patience, persistence, and courage that are common to Turkish nations. Secondly, it refers to the spiritual monuments that our ancestors had carved out of stone and inherited from mankind. The use of stone in the form of writing means that our great ancestors had a keen intelligence.

The third sign in the textual part (Turon) is directly related to the geographical area, the historical homeland, which is the source of the O'rxun-Enasoy monuments.

Its ascension to the heavens - his worldly status and honor - is directly linked to the mother tongue, which is the wing of the people's spirit.

In his article "Ona tilimiz", Abdurauf Fitrat evaluated the Turkish language such as "Eng boy va baxtsiz til". This language is really rich, with various synonyms and meanings, as Mahmud Kashghari has revealed in the works of "Devoni lug'otit-Turk", with deep logical reasoning. But at any given time, our native language devotees have always sought to prove this language by comparing it with another language, which has always had a dominant position, and thus proves the priority of the Turkish language. M.Koshgari mentioned in his preface to the dictionary study that his native language is not inferior to Arabic, and that "arab tili bilan ikki uloqchi ot singari teng poyga qilib turk tili", in his treatise on bilinguals, A.Navoi proved that Turkey is inferior to Persian, in particular in terms of vocabulary.

The reason for this phenomenon is that as long as the language exists, its owner, al-ulus, is also alive. Consequently, the invaders, who invaded a country by force or deception, have tried to destroy its language in order to completely destroy the defeated nation. Although they have not succeeded in removing the Turkish language from the human linguistic reserve, they have been able to absorb many words, grammatical and phonetic features in their languages, sometimes more or less. As a result, the beauty of the ancient language has been undermined. When Fitrat called the misfortune of the Turkish language, it was precisely this historical tragedy.

Thus, the system of symbols in the S_1 edge of the semicircle

Yillar bahorimni uchirdi chalqib, Muzlarga ko'chirdi o'tluq yozimni

lecture allows us to elucidate the fact that the relationship of contradiction in S_2. We explain this fact as follows:

O'rxun bo'ylarida toshga aylanding, Ko'klarga sanchilding, Turon bo'lding Sen.

The character system in the textual section ignores the views expressed in the symbols in S_1. This denial proves that the great and the victim's native language, as well as how many Turkish peoples, despite their tragedies, loss, severe trials and examinations, has maintained their identity and worthlessness.

2. At the next stage of our analysis, we will begin to determine the relationship between S_2 and ~ S_2 text fragments in the diagonal of SS. Before proceeding to this work, extract the appropriate lecture from the textual content for the angle ~S_2, which is opposite to the S_2 tip of SS:

Porloq osmoningda quzg'unlar uchdi,

E voh, yog'iylaring soldi yag'moni.

At the request of the semiotic square, this text passage must contradict the following lexicon in S_2:

Xun davridan omon keldi G'iroting,

Qutlug' Enasoyning ezgu ertagi.

The poetic fragment at S_2 was analyzed above. The number and the meaning of the characters were also clarified. Therefore, in order to clarify the lexical contradiction, we proceed to distinguish between the ~ S_2 characters and their interpretation.

The following two lines are selected for analysis:

1) porloq osmon;

2) quzg'unlar;

3) yog'iylar yag'mosi.

The first two of these three symbols have a connotative meaning. The third is a denotative essence.

Porloq osmon sign indicates the special place and importance of the Turkish people, in this connection, the sacred and honorable periods of their native language on the world level.

Quzg'unlar are a symbol of the statutory meaning that means **the enemy** (dushman) in the context of the literary text. The runic inscriptions that date from the Turkish period to the present day show that there have been many opponents from the earliest times. Much has been said about this, especially in the monuments of Tunyukuk, Bilga xoqon and Kultegin. The inscription Kultegin says about the ancient enemies of the Turks:

"Tabg'ach xalqi... yaxshi, alp kishini yo'latmas ekan. Biror kishi adashsa, urug'i, xalqi, uyi, yopinchig'igacha qo'ymas ekan. Shirin so'ziga, nafis ipagiga aldanib, ko'p turk xalqi, o'lding".

And there are such lines of sadness in the "Tunyukuk bitiktoshi": "Turk xalqi o'zining xoni bilan ham bo'lmay, Tabg'ach xoqonligiga qo'shildi...

Turk xalqi o'ldi, yo'q bo'ldi, tugadi. Turk sir xalqi yerida birorta ham urug' qolmadi."

According to the sources mentioned above, despite such tragedy and loss, the Turks, under the leadership of the newly born wise leaders and their bravery, united under one banner and managed to establish their own independent states.

The third character in the text, the "yog'iylar yag'mosi" is used to further strengthen the unity of the raven in the ancient Egyptian, thereby increasing the dramatic and tragic nature of the text.

In this way, the binary opposition in the diagonal text that unites S_2 and ~ S_2 illustrates the artistic depiction of historical reality and the vivid and vivid reflection of the conflicts of different times in the literary world.

3. After the first two stages of analysis are completed, we proceed to the final process, namely, S_1 and ~ S_2, as well as S_2 and ~ S_2. This is the final stage of our semiotic square-based study because it is this stage that allows us to draw conclusions as to whether the previous analyzes are true or not.

Before proceeding to this stage on the semiotic square, we think that it is necessary to give a brief summary of the implications and implications of the complimentary terms used as its counterparts.

Implication is a Latin term meaning "communication". It represents a conceptual, semantic relationship in logic in logic.

Electronic Explanatory Dictionary - The term complementarity in "Wikipedia" is interpreted as: "compatibility of molecules of biopolymers or their fragments in chemistry, molecular biology and genetics; it helps to form bonds between molecules or their structural parts "

This is stated in the Greymas doctrine: "Implication or complication is the vertical aspect of the semiotic square. This attitude represents the connection between the term and the denial of its opposite: goodness is not evil; height is not depth. If good does not mean evil, then the elements in the pair of good / evil belong to different semantic categories. "

In this context, if we look at the characters in the S_1 and ~ S_2 Lectures, we can see that they complement each other, and that they are members of a semantic category that is inextricably linked: Yillar bahorimni uchirdi chalqib, Muzlarga ko'chirdi o'tluq yozimni. / Porloq osmoningda quzg'unlar uchdi, / E-voh, yog'iylaring soldi yag'moni.

The relationship between S_2 and ~ S_1 also confirms this: Xun davridan omon keldi G'iroting, Qutlug' Enasoyning ezgu ertagi. /O'rxun bo'ylarida toshga aylanding, Ko'klarga sanchilding, Turon bo'lding sen.

Conclusion

Poetical work - analysis and interpretation allow us to come to the following conclusions:

1. The poem is dedicated to Abdulhamid Cho'lpon, a self-sacrificing father and mother of nation. Since the creation of the text dates back to the Soviet era, the basic views that should be expressed in it are based on certain symbols, that is, conventional. As it was mentioned earlier, the literary text covers the relation of Jadids belonging to Cho'lpon to their motherland, and especially to their mother tongue.

2. In this poetic text the binary opposition is dominated. The implications of the interpretation of this point on the basis of the straight line (S_1 and S_2), as well as diagonal (S_2 and ~ S_2), have been extracted from the text. This contradiction reflects the life or death of the people (Turkish), language (Turkish). No

matter how consistent the invasions of the nation and the language were, they survived the floods of history and survived to this day.

3. The main task of any interpretation, including semiotic interpretation, is to determine the level of art within the literary sample. the semiotic square also serves to fulfill this task. Unless a literary work is a perfect literary and poetic system, semiotic methods of study, in particular the semiotic square, cannot be applied to it. Consequently, this fiction is not a fiction. The ability to analyze some of the poems of "Abdulhamid Cho'lpon" in all aspects of SS allows it to be regarded as a literary text.

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QR – Issue QR – Article

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DIPLOMATIC AND COMMERCIAL RELATIONS OF BUKHARA WITH RUSSIA IN XVI-XVIII CENTURIES

Abstract: *The article discusses the diplomatic and trade relations of Bukhara (Central Asia) with Russia of the XVI-XVII centuries.*

Key words: *trade, purchase and sale, certificate, duty, zandani, cotton fabrics, shoibofi dukons, alachabofi, adrabofi, kalamofofi and carbosbofi. expedition, India, Afghanistan, ambassador, Balkh.*

Language: *English*

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Scopus ASCC: *1202.*

Introduction

Bukhara is an ancient city. The annals of history record the testimonies of travelers visiting the valleys of the Zarafshan River (which means “Gold-bearing”).

Many ancient authors wrote about Bukhara of the early Middle Ages. The heyday of this city is particularly detailed in Arabic sources. All peoples who lived along the ancient "Silk Road" from Rome to China and from medieval Iran to the ancient Turkic lands did not cease to be interested in Bukhara.

Analysis

Trade relations between Russia and Central Asia were of great importance for the economic development of both the Central Asian khanates and the Russian State. Along with economic ties, diplomatic ties also intensified.

In 1558, Ambassador Ivan IV arrived in Central Asia, who visited Khorezm and Bukhara. In 1559, return embassies from Bukhara and Balkh were sent to Moscow with him. The purpose of these visits was to resolve a number of trade issues. The Bukhara Khan Abdullah asked Ivan IV for the free admission of his merchants to Kazan, Astrakhan and a number of other cities. In the fall of 1559, two Bukhara ambassadors arrived in Moscow. The Bukhara government through its ambassadors received permission from the Bukhara merchant to come to Astrakhan for bargaining. "Merchant certificates" of Ivan IV allowed the trade of Asian merchants in other cities of Russia.

In 1563, 1566 and 1583, ambassadors came to the Russian state from Bukhara and Samarkand. They were supposed to resolve the issue of trade relations with Russia. In 1585, the Bukhara Khan Abdullah sent his ambassador Muhammad Ali to Tsar Fedor Ivanovich with goods and gifts. The tsarist government was interested in Central Asia as a base in the monopoly trade in silk with Western Europe. In 1589, the Russian government allowed the Bukhara Ambassador Dostum and the Iurian Ambassador Kadysh duty-free purchase of goods along their route.

Central Asian merchants conducted lively trade with Iran, India and the Russian state. Trade was not limited to local goods. Asian merchants merchants were intermediaries between countries with which Bukhara and Khiva maintained trade relations. The products of Bukhara handicraft production were exported mainly, luxury goods were imported. The assortment of goods of Russian-Bukhara trade was diversity. Cotton fabrics were imported from Bukhara to the Russian state, silk fabrics in a smaller amount, Bukhara merlushka (karakul), carpets, clothes, raw silk. At that time, weaving workshops worked in Bukhara - shoibofi, alachabofi, adrabofi, kalambofi and carbosbofi dukons. In addition, trading companies built trading companies for themselves in Bukhara,

but more often they rented European-style sheds (Nadezhny's office for buying raw cotton, karakul, lye cotton, the Caucasus Mercury office, Burnashev's office, and Aulio Ishinboev's office, representing the capital of the Moscow magnate Irzin, who buys cotton and astrakhan). From the Russian state to Bukhara, Russian-made leathers, metal products, nails, locks, axes, haberdashery, furs, foreign cloth and especially a lot of "Chipped goods-wooden utensils" were sent.

Discussion

The Russian government was interested in the fact that click was continuously imported from Central Asia into Russia. This is evidenced by the article lists of Russian ambassadors traveling to Khiva and Bukhara in the 17th century. The feudal elite, in turn, required the importation of expensive furs. So, the Bukhara ambassador Farrukh, assuring that there was a lot of raw lye in Bukhara, told the duma nobleman AS Matveev that Bukhara needed "sable kind foxes of black horns and cloth, fish bone (margin fangs)". As mentioned above already in the XVI-XVII centuries. strong ties were established between Central Asia and Russia. The Volga, near Uralia and Western Siberia were connected by trade. Central Asian merchants came to Astrakhan and Tobolsk. Unity of religion and intimacy. Languages for Kazan Tatars and Bashkirs facilitated trade transactions. Muslim merchants from Russia traveled with goods to Central Asia.

The Uzbek khanates tried to create favorable conditions for the trading operations of their merchants in Russia. In 1716, the Bukhara Khan Abuleyz sent an embassy to Moscow to negotiate on "Multiplying Trade."

Khan sought permission to "freely trade Bukhara in Russia" and complained about high customs duties. In a letter of reply from Peter the Great to Bukhara Khan Abulfayzu dated March 18, 1718, his proposal to establish friendly relations and return the captives says :. "In the past 1717, the ambassador of Khan-kuli (Hon қuli) Topchi Bashama sent from you to the court of our royal majesty sent to you with pleasure that is acceptable, if you wish, so that the friendship between our royal majesty the state and you contains we are a great sovereign and on our part we are encouraging you. It's so pleasant for us that you, as a sign of this friendship, of our prisoners, Russian captives, who were with you when you were free, sent with the aforementioned ambassador, for which we the great sovereign will not leave mutually similar cases like that, I will give a penchant to pay back. "

Peter I, who was at the head of the absolutist state, ceased to regard the Bukhara and Khiva khanates as equal in political position in Russia. He began to exert diplomatic pressure on the khanates, trying to subjugate them.

Receiving information that there is a lot of gold in the sands of the Amu Darya and coastal residents wash it in large quantities, Peter I outlined a plan for penetrating the Khanate in Uzbekistan. He hoped to enter military units in Bukhara and Khiva with the consent of the khans themselves under the pretext of "Strengthening their power and help against enemies."

To implement the plan of Peter I organized two expeditions. The expeditions were led by Prince Alexander Bekovich-Cherkassky and Captain Ivan Bukh Goltz. The expedition failed to achieve success.

In 1721, the Bukhara ambassador was in Russia. When he returned to his homeland, they sent him to Bukhara, Italian Ambassador Florio Beneveni. This is stated in the letter of the Bukhara Khan Abulfayz

"The most distinguished ambassador, Mr. Florit Beneveni, with all courtesy and worship, has safely arrived to us and your Majesty the certificate honestly, as the sovereign should, filed." In turn, Beneveni was instructed to find out what goods Bukhara people trade, whether it is possible to get gold and then get to those places. Beneveni went to Bukhara through the Caucasus, Iran. He returned to Russia only in 1725 after the death of Peter I.

During the XVII century. Bukhara and Khiva continued trade and diplomatic relations with the Russian state. By the end of the 16th century, caravans of Asian merchants (merchants) became commonplace on the routes that connected the Russian state with Khiva and Bukhara. In the XVII century. the way from Bukhara along Sary-Su, through the central regions of Kazakhstan to Tobolsk and from there to the Volga region and the inner regions of the Russian state, was very busy. Sometimes Central Asian merchants traveled from the Russian state to Central Asia through Iran. During the XVII century. Eight Russian embassies took place in the Central Asian khanates. More often, ambassadors came from Central Asia, during the same period in Russia there were 13 Bukhara embassies.

Bukhara khans, interested in trade relations with the Russian state, sometimes took measures to make relations along these routes safer, and caravans moving from Russia received military protection, campaigns against the Elba River were made against nomads to clear them of trade way.

Russia received from Central Asia all kinds of paper fabrics (zandani, Mitkal, Kindyaki) cotton, raw silk, etc. The Russian government and Russian trading people were especially interested in raw silk.

In order to the Russian envoys in Bukhara I.S. Pazukhin in 1669-1673. it is said: "In silk to the land and in other cities raw silk will be born and that silk goes through the Kizilbash and Turkish lands to the Germans, but does not go to Astarakhan to Moscow." Both trade people and the governments of both countries participated in Russian-Bukhara trade. The proportion of Russian treasury and khan trade was quite large. Tsarist and Khan trade was usually exempted from trade duties. Khan trade was carried out through trusted merchants. " The intermediaries in tsarist trade were Russian trading people - "guests".

Conclusion

The growing demand of Russian industry for Central Asian raw materials and interest in the export of industrial products stipulated expansion in the 17th century. trade relations between Russia and Central Asia. A new stage in the development of trade relations between Russia and Central Asia took shape after the adoption by the Kazakh aces of Russian citizenship and the founding of Orenburg. Bukhara goods began to flow through the Kazakh steppes in caravans to Orenburg, Trontsk, Petropavlosk and the cities of the Irtysh fortified line. In this regard, a prominent place in the diplomatic relations of Central Asia with Russia is occupied by questions about the expansion of trade and the safety of movement of merchant caravans. On the other hand, the Russian state set itself the task of gradually conquering the territories of the Central Asian states and entering Afghanistan and India.

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QR – Issue QR – Article

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THEORETICAL AND PRACTICAL ASPECTS OF SELF-GOVERNANCE IN SPORTSMEN

Abstract: *This article examines theoretical and some practical aspects od self-controling in sportsmen. The development of self-governance, specific requirements, behavior and some other demands of sport terminology has been discussed, and observed by examples.*

Key words: *behavior, psychoanalytic, adaptation, aggressive movements, self-control, sportsmen.*

Language: *English*

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Introduction

The nature of aggressive behavior in athletes is often determined by the age characteristics of the individual. Each stage of age has a specific developmental context and has specific requirements. Adaptation to age demands is usually followed by different displays of aggressive behavior. It is known that younger children often display aggressive behavior if they cry out loud, if they cry out loud, and do not communicate. Psychoanalytic studies suggest that infants are more likely to be angered when their demands are ignored. At the same time, it is well known that young children tend to bully their newborn brother or sister in order to maintain their motherly love.

By following the kindergarden requirements, children can pinch, mock, spit, fight, bite and even swallow something that is not nutritious. Such actions take place without words - impulsive, unconscious and clear. At this age, the manifestation of passive aggression is negativity, stubbornness, speaking or refusing to eat, biting nails or lips. It should be noted that the behavior of a preschool child in a home depends on the emotional climate of the family, and the group of children, in turn, is a reflection of the educator's inner state. Children are more likely to repeat aggression if they exhibit or experience aggression.

Analysis

In general, child aggression is the opposite of insecurity. When a child feels safe (for example, when his or her needs for love and security are not met), he or she will experience many fears. In trying to conquer her fears, the child uses aggressive behavior to protect her. Another possible way to overcome fear is to focus on aggression. Autoagression can be expressed in different ways, such as suicidal thoughts, shyness or self-punishment.

In junior high school, aggression is often used in the form of bullying, harassment, strife, and strife to weaker students (their “victim of choice”). Aggressive behavior of school children becomes a serious problem in a number of situations. The extreme reaction of teachers and parents to such behavior usually does not diminish the aggression of children, but on the contrary, as it is an indirect proof of the independence and power of the aggressors. Nevertheless, it is the teacher, his authority, and his ability to express openly to aggressive behavior that

motivates children to choose the most socially acceptable forms of behavior.

A specific feature of aggressive behavior in adolescence is its attachment to peer groups against the use of adult authority. Being aggressive at this age means "to be strong or look strong." Each adolescent group has its own legends and traditions supported by a leader. For example, joining rituals are common (or testing newcomers). The group's uniforms (including teenage fashion in general) are ritualistic. Rituals increase the sense of belonging to the group and give teenagers a sense of security, but legends remain the cornerstone of their lives. Legends are widely used to justify the internal and external aggression in the group. For example, any aggression against non-members of the group is justified by the words: "They have sold us... We have to protect ourselves. Inspired by the legend of the group, adolescents experience violence, heroism, and group loyalty. At the same time, in some situations, the initiators of aggressive behavior may be individual outsiders, disadvantaged adolescents, and adolescents who have tried to exert their position through aggression.

Thus, aggressive behavior has become commonplace for a child and teenager. In addition, aggressive behavior performs a number of key functions in the socialization process of an individual. Normally, it protects your fears, promotes self-interest, protects you from external threats, and helps you adapt. There are two types of aggression: good quality adaptive and destructive - disadvantageous.

In general, aggressive demonstrations are not so dangerous for the development of the child or adolescent, but the consequences of their actions and the wrong reaction of others. If violence, dominance, recognition, money, and other rights can be achieved, children and adolescents may develop behaviors based on the dominance of power, which can also form the basis of social activities for adults (eg criminal groups). The tendency of those around them to suppress aggression may lead to the opposite, not the expected result. In adults, the types of aggressive behaviors are diverse because they are largely characterized by individual traits. As individual-personality traits that complement aggressive behaviors, they usually address the following aspects of behavior, including community dissatisfaction, nervousness, suspicion, heresies (eg ethnicity), and guilt. the tendency to feel shame. The following beliefs can play a major role in supporting a predisposition to violence: the individual's lordship (sometimes the fate of other people) and his positive attitude to aggression (useful and normal) as an event).

Discussion

One particular category of people can be thought of as extremists, who display aggression, often, or in the form of brutality. The extremists, in turn, are divided into two groups: low and high self-government groups. In the first group, there is a tendency to persist in aggression due to the development of barrier mechanisms, while in the second group, they can restrain themselves for a long time, but after the patient's bowl is filled with wild forms of aggression will be displayed. Another facet of aggressive behavior is its ability to exert frustration. It is known that frustration is a state of interference in meeting one's goals or needs. Some authors view frustration as one of the leading causes of aggressive behavior. In general, frustration is a common phenomenon and people are characterized by their ability to deal with it. If aggressive behaviors successfully contribute to the prevention of frustration, it is likely to be exacerbated by the training law. In this case, a person may have a high sensitivity to frustration and may experience problems if there are no socially acceptable ways of addressing frustration.

Other - when assessing the effect of gender (gender), men (boys) show very high levels of physical and physical aggression, while women (girls) are directly and verbal. Generally, men tend to be more physically abusive, and women tend to use more and more psychological options. Despite the importance of gender, age, and individual factors, most researchers believe that social development is a key factor in the development of aggressive behavior. One of the most controversial issues is the impact of the media on the aggressive behavior of the individual. Proponents of the negative impact of the media come from the following: When people behave aggressively, first of all, when watching the aggression of others. M.Husmann and a group of researchers have observed a correlation between 20 years of TV viewing and aggression. They found that the gravity of the crime committed in the age of 30 was consistent with the benefits of the 8-year-old's testimony. The mechanism for generating aggressive behavior on television can be as follows: excessive interest in TV shows - aggressive fantasies - comparing oneself to the person (hero) - solving problems and influencing people mastering aggressive methods - repeating aggressive behavior - using aggression to solve problems in interpersonal relationships - support - aggressive habits - underdeveloped social and learning skills - frustration - over-broadcasting ring.

The formation of aggressive behavior through observation can be accomplished through several conditions. First of all, what he is seeing must be real and touching his personality. Second, what he sees should be perceived as aggression. Third, when the viewer sets himself up as an aggressor, aggression occurs, but for the individual, the object of aggression is imagined as the victim of aggression in the film. The next prerequisite to study is that the hero in the film achieves or enjoys the result of aggression, which is important to the viewer.

In general, viewing aggressive scenes does not have a significant negative impact on most adults' expectations, as they are characterized by a set of internal and external conditions. Violence scenes may vary from person to person: hate, unpleasantness, verticalization (perceived events as unrealistic), and in some cases, admiration and aspiration. Nevertheless, the negative impact of the media on the development of children and adolescents poses real risks and requires special training.

While the impact of the media on the behavior of the media remains unclear, it is now recognized as the main source of aggressive behavior in the family. It is well known that aggression is not limited to enemies, competitors or strangers. Many families experience psychological or physical abuse. There are many different types of aggression in the family. This may include physical or sexual violence, cold, abusive behavior, negative assessment, pressure on the child, emotional abuse. Family members may display aggressive behaviors or behaviors of a child, such as pride in winning a child in war.

The aggressive behavior of a child is influenced by various family factors, such as low family cohesion, conflict, reduced child and parenting, poor relationships between children, and inadequate family education. For example, parents who face severe penalties, who are over-controlling (hyperopecia) or vice versa (hypoopeca), are more likely to face aggression and deafness in their children. Another idea is that the father's aggression against the mother has a negative effect on the child (physical abuse or explicit discrimination).

A.Bandura and R. Walter conducted a special study to investigate this "family" problem and have the following information. Parents of aggressive boys placed less demands on their children's achievements than parents of the control group (without aggressive behavior) and limited them in childhood. At the same time, the adolescents examined were more resistant to parental influence. Boys with aggressive behavior were more likely to be attached to their mother than their father. Agents of aggressive adolescents used more coercive methods, whereas those in the control group used more internal controls, such as persuasion.

Aggressive boys are characterized by tensions and the tendency to punish the child more often, while their mothers are less demanding and less intimate in their relationships. Aggressive boys rarely compare themselves with their fathers, compared with the adolescents in the control group, who are generally critical and abusive to their father. Researchers believe that all of this has made it difficult for the parental values to be aligned and fulfilled.

A.Bandura and R. Walter explored the social relationship between adolescents and their marital status and identified three main characteristics that determine child behavior: their willingness to establish dependence (sexual-personality) relationships and their conscience development. degree, the power of motivation against aggression. According to the authors, the family should create minimal conditions for effective social support. The first prerequisite is to support the motivation for bonding, so that the child learns to be interested, attentive, and willing to be around. The second prerequisite is "social pressure" in the form of consecutive demands and prohibitions (in this case, parents separate the social norms). On the contrary, bad forms of behavior are established by frustration of the need for parental love in the family, the use of persistent punishment (its priority over the methods of promoting good behavior), incompatible with the demands of parents. -to show aggression by the house.

Thus, according to the “Assyrian aggression theory,” the occurrence of aggressive behavior in a child is associated with a lack of care and closeness by one or both parents. Obesity can cause a child to experience constant tension as he or she develops a pattern of imitation of adults (including emotional imitation). The behavior of the child develops in the relationship with the parents and as a result is transferred to other people (classmates, teachers, spouses). If the aggression of a particular person is stopped (or if it is impossible to do so), aggression will be directed to a new object that is more "safe". Many researchers say that children of different sexes have different effects on family behaviors. According to a number of authors, when a girl is associated with atrocity in her childhood, she is more likely to develop a masochistic pattern of behavior, while a boy compares himself to an aggressor and is more likely to be sadistic. there is a high probability that the Further evidence of the family's leading role in the emergence of aggressive behavior is the prevalence of aggressive disorders in children from foster homes (unlike adoptions). At the same time, not all children without parental care will not be aggressive. Another consequence of family deprivation is anxiety, overindulgence, excessive preparation or deep anxiety (the outcome is obviously related to the degree of deprivation, the age of the child, the characteristics of the child and other conditions).

Conclusion

Thus, aggressive interest in the negative effects of internal and external factors can actually turn into bad forms of aggression, ranging from strong destructive behavior to dangerous societies. However, aggression does not necessarily have to have negative consequences. For example, it can be focused not only on new and new facilities, but also on different forms of activity (sublimation) - business, training, sports, leadership, etc. Undoubtedly, moderate aggression is protective and serves to survive. At the same time, it is seen as a source of individual activity, its creative potential and aspiration for success. It is necessary and necessary for a person to demonstrate the various

manifestations of aggression, non-social forms of aggression, and finally learn how to avoid violence against themselves and others. The fate of personal aggression is the right of every adult to choose, but the aggression to conquer is one of the most difficult psychological tasks in general.

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COGNITIVE MODELING OF DEPENDENCE OF NUMBER OF INDIVIDUAL TELEPHONES AT ENTERPRISES ON CHANGES IN STRUCTURES OF INCOME AND EXPENDITURE OF ENTERPRISES

Abstract: *The article solved a new problem: for a given real multidimensional sample of values m = 44 values of 8 T-factors and m = 44 values of the indicator "the number of individual telephone sets (ITS) for enterprises", find the dependencies on changes in the items of income and expenses (indicators) of enterprises of the Republic of Kazakhstan. 4 groups of enterprises found. For them, revealed the structure of cash income, expenses. In the group of large enterprises (LI, 53%) - indicators of changes in the share of the contribution to ITS (17.29%), in terms of industrial production "(16.679%,) in accounts receivable and payable per enterprise (16.04%). Their expenses for long-distance calls - 17.8%. In the group of medium-sized enterprises (MI, 12.27%), the share of revenues is 18.84%, the share of expenses on ITS is 40.18%. For small enterprises (SI, 8.34%) 70.476% of the total number of all enterprises of the Republic of Kazakhstan brings to the economy 12% of cash turnover (income, expenses). The group of budget enterprises (BI, its share of 8%) is provided with budget investments in fixed assets by 8% out of 100% =53% +12.27% +8.34% +8% +ε, ε=11.51% - the share of unaccounted for T- factors.*

Key words: *the amount of ITS for enterprises, cognitive modeling of the dependence of the quantities of ITS at the enterprises of the Republic of Kazakhstan on changes in the structure of their income and expenses.*
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КОГНИТИВНОЕ МОДЕЛИРОВАНИЕ ЗАВИСИМОСТИ ЧИСЛА ИНДИВИДУАЛЬНЫХ ТЕЛЕФОНОВ НА ПРЕДПРИЯТИЯХ ОТ ИЗМЕНЕНИЙ В СТРУКТУРАХ ДОХОДОВ И РАСХОДОВ ПРЕДПРИЯТИЙ

Аннотация: *В статье решена новая задача: для заданной реальной многомерной выборки значений m=44 значений 8 Т-факторов и m=44 значений показателя «количество отдельных телефонных аппаратов (ОТА) для предприятий» найти зависимости от изменений статей доходов и расходов (показателей) предприятий Республики Казахстан.Найдены 4 группы предприятий. Для них выявлены структуры денежных доходов, расходов. В группе крупных предприятий (КП, 53%) - показатели изменений доли по вкладу в ВРП (17.29%), по объему промышленного производства»(16.679%,) по дебиторской и кредиторской задолженностям на 1 предприятие (16,04%). Их расходы на междугородные разговоры - 17,8%. В группе средних предприятий (СП, 12.27%) – доля доходов- 18.84%, доля расходов на ОТА,- 40.18%. Для мелких предприятий (МП, 8.34%) 70.476% от количества всех предприятий РК привносит в экономику 12% денежных оборотов (доходов, расходов). Группа бюджетных предприятий (БП,ее доля 8%) обеспечена*

бюджетными инвестициями в основной капитал на 8% из 100% =53%+12.27%+8.34%+8%+ε, ε=11,51% - доля от неучтенных Т-факторов.

***Ключевые слова**: количество ОТА для предприятий, когнитивное моделирование зависимости количеств ОТА на предприятиях РК от изменений структур их доходов и расходов.*

Введение

Процессы системной дезинтеграции, происхо дившие в экономике (народном хозяйстве), социальной структуре, общественной и политической сфере привели к появлению в Казахстане небольшого количества крупных доходных и недоходных предприятий с инвестициями в основном капитале. В неприятные, непонятные ситуации попали как работодатели, так и менеджеры, наемные работники и население страны.

«В 2000 г. страна имела на 1,5 млн чел. населения меньше, чем в 1991 г. (таблица 5.2). При этом резко выросла доля бедного населения. В 1998 г. доходы ниже прожиточного минимума имело 39% населения[8]. В 1991–1995 гг. произошел обвал в инвестиционной сфере. Объем капиталовложений в 1995 г. составил менее 1⁄5 от уровня 1990 г. Инвестиции в основной капитал, несмотря на некоторое оживление во второй половине 90-х гг., составляли в 2000 г. соответственно всего лишь 29% от уровня 1990 г. Норма валового накопления основного капитала в 1995–1999 гг. в среднем составляла 18,8% при максимальном значении 22,3% в 1995 г.[9] При этом в инвестициях ведущую роль играл иностранный капитал. В 1996 г. наметились первые позитивные сдвиги: был зарегистрирован положительный рост ВВП, выросло промышленное производство. В 1997–2000 гг. капиталовложения ежегодно увеличива лись более чем на 30%. Столь заметный рост объяснялся в первую очередь чрезвычайно низкой исходной базой. Инвестиции в основной капитал лишь частично компенсировали сокращение производственных фондов и были недостаточны для создания основы для поддержания устойчивых положительных темпов роста в среднесрочной и долговременной перспективе. Таким образом, с середины десятилетия казахская экономика (с перерывом на 1998г.[10]) демонстрировала устойчи вые положительные темпы роста ВВП и восстанов ление производства в промышленности. Однако к 2000г. не был восстановлен уровень производства, зафиксированный на 1990 г. Острой проблемой 1990-хгг. была ситуация с неплатежами: просроченная кредиторская задолженность в 1995–1998гг. не опускалась ниже 35% ВВП. В 1998 г. объем просроченной кредиторской задолженности более чем в 4 раза превышал денежную массу[11]. К началу 1999г. задолженность по заработной плате достигала 69% от суммы наличных денег, обращающихся в национальной экономике[12]. Во второй половине 1990-х гг. более половины предприятий и организаций страны были убыточны, а 30% предприятий промышленности производили так называемую «отрицательную добавленную стоимость». (сноски [8,9,10,11,12] относятся к тексту ресурса[1])

Происходили одновременно трансформация государственной собственности, приватизация, налаживание производственных связей, поиск партнеров, рынков и субъектов сбыта, создание финансовой, транспортной инфраструктуры, зако нодательной базы и многое другое. Начался приток внешнего капитала, появились филиалы зарубежных банков, компаний, ориентированные на сырьевые ресурсы, замедлился отток населения в другие страны. Сфера услуг расширилась, появились новые виды услуг, от которых «нельзя отказаться»: отдельные индивидуальные телефоны, интернет, купля, строительство дома и т.д.

Актуальными стали учет, анализ и прогнозирование структур доходов, расходов предприятий, населения. Ранее мы провели когнитивное моделирование [1] изменений цен и денежных расходов населения, когнитивное моделирование [2] зависимости количеств ОТА в квартирах от изменений доходов и расходов населения. Ниже мы проведем анализ новых Т-факторов, влияющих на количество ОТА в офисах предприятий Казахстана.

Здесь изложим описание разработанной когнитивной модели зависимости количеств ОТА на предприятиях РК от изменений структур доходов и расходов предприятий, включая расходы на новые виды услуг.

Исходные данные по существенным Т-факторам, влияющих на количество ОТА в офисах предприятий Казахстана

Анализ значений большого количества Т-факторов, теоретически влияющих на «количество ОТА для предприятий» показал пригодность значений только 9 существенных для нашего моделирования Т-факторов и значений одной Y-переменной Y2 («количество ОТА для предприятий»).

[1] www.cc-sauran.kz/rubriki/economika/47-kazahstan-prichiny-i-proyavleniya-ekonomicheskogo-spada-v-1990-gody.html

Рассмотрим 9-мерную выборку значений $X^0_{mn}=\{x^0_{i,j}\}$, m=44, n=9, значений 8 Т-факторов (первые 8 столбцов X^0_{mn}) и m=44 значений показателя «количество ОТА для предприятий», 9-ый столбец X^0_{mn}). Размерности 8 Т-факторов {T1, T5,T8, T9, T10, T12, T14, T15, Y2} разные. После вычисления значений средних и стандартных отклонений для 9 переменных имеем матрицу $Z_{44,9}$ стандартизованных безразмерных значений 9 z–переменных. Полученную из исходной реальной матрицы $X^0_{44,9}$ стандартизованную матрицу $Z_{44,9}$ преобразуем в матрицу $Y_{44,9}=Z_{44,9}$ C_{799} значений y–переменных, решив Прямую Задачу АГК и применяя соотношения из модели Хотеллинга-Жанатауова [3,4]. Для вычисленной корреляционной матрицы $R_{9,9}$ решаем Прямую Спектральную Задачу (ПСЗ): $R_{9,9}$ =>($\Lambda_{9,9}$ $C_{9,9}$). Здесь Λ_{99}=diag(4.7744, 1.3342, 1.1041,0.7510,0.5567, 0.2632,0.1413, 0.0750, 0.0001), матрица $C_{9,9}$ является матрицей собственных векторов. ПСЗ - прямая спектральная задача диагонализации известной выборочной корреляционной матрицы $R_{nn}=(1/m)Z^T_{mn}Z_{mn}$, $R_{nn}=R^T_{nn}$. Она решается для симмет рической матрицы $R=R^T$, в результате вычисляются 2 матрицы: ортонормированная матрица C_{nn} собственных векторов $\mathbf{c_j}=(c_{1j},c_{2j}\ldots c_{nj})^T$,j=1,…,n, расположенных по её столбцам: $C_{nn}=[c_1|c_2|\ldots|c_n]$. Матрица C_{nn} согласована со спектром $\Lambda_{nn}=diag(\lambda_1,\ldots\lambda_n)$ таким образом, что $RC=C\Lambda, C^TC=CC^T=I_{nn}$, $diag(R_{nn})=(1,\ldots,1)$, $tr(R_{nn})=1+1+\ldots+1=tr(\Lambda_{nn})=\lambda_1+\ldots+\lambda_n=n$, $\lambda_1\geq\ldots\geq\lambda_n\geq0$.

Для нас существенными являются доминирующие собственные числа $\lambda_1\geq\ldots\geq\lambda_\ell\geq0$, ℓ=4. Они важны: при выделении заметных «весов» для 4-х y-переменных (ℓ=4) формирующих когнитивные смыслы 4-х валидных показателей анализируются компоненты только 4-х собственных векторов. Четыре собственные векторы соответствуют 4 выявляенным y-переменным, когнитивно интерпретируемых по смыслу. Каждый из 4-х смыслов равен сумме смыслов своих измерямых показателей, влияющих на показатель «количество ОТА для предприятий». При анализе вычисленных значений элементов спектра $\Lambda_{9,9}=\Lambda_{nn}=diag(\lambda_1,\ldots\lambda_9)$ такогочто: $RC=C\Lambda$, $C^TC=CC^T=I_{nn}$, $diag(R_{nn})=(1,\ldots,1)$, $tr(R_{nn})=1+1+\ldots+1=tr(\Lambda_{nn})=\lambda_1+\ldots+\lambda_n=n=9$, $\lambda_1\geq\ldots\geq\lambda_n\geq0$, число ℓ доминирующих собственных чисел определяется из условия (по критерию Джоллиффа): $\lambda_\ell\geq sqrt(2)/2$. Так как Λ_{99}=diag(4.7744, 1.3342, 1.1041, 0.7510, 0.5567, 0.2632, 0.1413, 0.0750, 0.0001), то имеем ℓ=4 доминирую щих собственных чисел.

Модели и задачи

Для вычисленной корреляционной матрицы $R_{7,7}$ (Nf,kbwf 1) решам Прямую Спектральную Задачу (ПСЗ): $R_{9,9}$=>($\Lambda_{9,9}$,$C_{9,9}$). ПСЗ - прямая задача диагонализации известной выборочной корреляционной матрицы R_{nn}. Она решается для симметрической матрицы $R=R^T$, в результате вычисляются 2 матрицы: ортонормированная матрица C_{nn} собственных векторов $\mathbf{c_j}=(c_{1j},c_{2j}\ldots c_{nj})^T$, расположенных по её столбцам: $C_{nn}=[c_1|c_2|\ldots|c_n]$, согласованная со спектром $\Lambda_{nn}=diag(\lambda_1,\ldots\lambda_n)$ таким образом, что $RC=C\Lambda$, $C^TC=CC^T=I_{nn}$, $diag(R_{nn})=(1,\ldots,1)$, $tr(R_{nn})=1+1+\ldots+1=tr(\Lambda_{nn})=\lambda_1+\ldots+\lambda_n=n$, $\lambda_1\geq\ldots\geq\lambda_n\geq0$. Для анализа вычисленных значений элементов спектра $\Lambda_{9,9}=\Lambda_{nn}=diag(\lambda_1,\ldots\lambda_9)$ такого что: $RC=C\Lambda$, $C^TC=CC^T=I_{nn}$, $diag(R_{nn})=(1,\ldots,1)$, $tr(R_{nn})=1+1+\ldots+1=tr(\Lambda_{nn})=\lambda_1+\ldots+\lambda_n=n=9$, $\lambda_1\geq\ldots\geq\lambda_n\geq0$, а также для вычисления f-параметров применяем Математическую Модель Спектра Неизвестной Корреляционной Матрицы [5]. Для анализа вычисленных значений элементов матрицы собственных векторов $\mathbf{c_j}=(c_{1j},c_{2j}\ldots c_{nj})^T$, где его компоненты когнитивно интерпретируются. Матрица $C_{9,9}$ теперь в рамках разработанной новой Когнитивной Модели Зависимости Количеств ОТА от Изменений Зарегистрированных Доходов, Расходов Предприятий Республики Казахстан интерпретируется также как и статьях [1,2, 6-12]. Матрица $C_{9,9}$ одновременно является и матрицей коэффициентов комбинационных связей. [6]. «Комбинационная связь-связь между одной y-переменной и n z-перемеными, представляется в виде вектора $\mathbf{c_j}=(c_{1j},c_{2j}\ldots c_{nj})^T$. По определению [12] она является единственным решением ПСЗ и является матрицей собственных векторов. В задачах извлечения знаний из цифровых данных, представленных в виде таблицы типа «объекты-свойства» [7-8, 13-21] анализу подвергаются коэффициенты комбиинационной связи из матрицы $C_{9,9}=[cor(z_i,y_j)]$, i=1,…,9; j=1,…,9, (z_i,y_j)-корреляций. В Обратных Спектральных Задачах матрицы коэффициентов комбиинационной связи C_{nn}, n=6, моделируются [9-11]. «Компоненты вектора $\mathbf{c_j}=(c_{1j},c_{2j}\ldots c_{nj})^T$ комбинационной связи подчиняются условиям $c^2_{1j}+c^2_{2j}+c^2_{3j}+c^2_{4j}+c^2_{5j}+c^2_{6j}+c^2_{7j}+c^2_{8j}+c^2_{9j}=1$,i=1,…,9; j=1,…,9» [1,2,9-11]. В решаемой нами ниже Прямой Смысловой Задаче значение элемента z_{kj} матрицы $Z_{44,9}$, [6] интерпретируется как изменчивость z_{ik} «веса» c_{kj}:z_{ik}*c_{kj}. Если y_{i2}=-0.3768*z_{i1}+…, y_{i2}=0.6177*z_{i1}+…, то в i-ых объектах изменчивости «веса» имеют разные значения изменчивостей ($z_{11},\ldots,z_{m1}$) для одного фиксированного «веса», например, для «веса» - c_{12}=-0,3768. Для другого «веса» c_{13}=0,6177 в i-ых объектах имеются те же m разных значений изменчивостей z_{11} ,…,z_{m1}. Для элементов j-го столбца матрицы C_{99} выполняются равенства вида $c^2_{1j}+c^2_{2j}+c^2_{3j}+c^2_{4j}+c^2_{5j}+c^2_{6j}+c^2_{7j}=1$, j=1,…,9. Они выполняются при решении Прямой Спектральной Задачи, а при решении Прямой

Смысловой Задачи пре образуются в равенства другого вида:
$corr^2(z_1,y_j)+corr^2(z_2,y_j)+corr^2(z_3,y_j)+corr^2(z_4,y_j)+corr^2(z_5,y_j)+corr^2(z_6,y_j)+corr^2(z_7,y_j)+corr^2(z_8,y_j)+corr^2(z_9,y_j)=1$, j=1,…,9. Для элементов i-ой строки нашей матрицы C_{99} (Таблица 2) в Прямой Смысловой Задаче применяемые равенства из ПСЗ имеют вид:
$corr^2(z_i,y_1)+corr^2(z_i,y_2)+corr^2(z_i,y_3)+corr^2(z_i,y_4)+corr^2(z_i,y_5)+corr^2(z_i,y_6)+corr^2(z_i,y_7)+corr^2(z_i,y_8)+corr^2(z_i,y_9)=1$. Но учитываются в когнитивном осмыслении только заметные по весу слагаемые.

Смысл z-переменной задан в ее имени (в Прямой Смысловой Задаче) или когнитивно определяется (в Обратной Смысловой Задаче [19-21]). Смысловое имя каждой z-переменной в ОСЗ когнитивно конструируется фразой, имеющей смысл, тесно связанный со смыслом соответствующей y-переменной [16-21]. Эта z-переменная такова, что обладает весомым «весом». Значения «весов» при значениях этих z-переменных по абсолютной величине превышают 0.4. По шкале Чэддока пороговое значение 0.4 относится к интервалу «умеренных» корреляций. Поэтому мы должны использовать смыслы z-переменных из множества $\{z_1,z_2,z_4,z_5,z_6,z_7,z_8,z_9\}$ лля когнитивного конструирования фразы-смысла y-переменной с номером 1.

Мы ниже решаем Прямую Смысловую Задачу [1,2,13-15] и когнитивно конструируем одну фразу, имеющую смысл, равный сумме смыслов только тех z-переменных, которые имеют заметные веса из совокупности весов $corr^2(z_1,y_j)$, $corr^2(z_2,y_j)$, $corr^2(z_3,y_j)$, $corr^2(z_4,y_j)$, $corr^2(z_5,y_j)$, $corr^2(z_6,y_j)$, $corr^2(z_7,y_j)$, $corr^2(z_8,y_j)$, $corr^2(z_9,y_j)$, i=1,…,9; j=1,…,9.

Полученный общий смысл для y-переменной должен быть тесно связан со смыслами заметных по весомости z-переменным [1,2,13-15]. В результате, как показано ниже, конструируем новый, отличающийся смыслом от заданных смыслов z-переменных цифровой смысл-знание в виде фразы, имеющей обоснованный смысл. Источниками знания являются числа из таблиц (матриц $Z_{44,9}$, $C_{9,9}$ числовых данных), из векторов $\mathbf{c_j}=(c_{1j},c_{2j}\ldots c_{nj})^T$, $j\in\{1,\ldots,9\}$, подчиняющихся определенным равенствам многомерной математической модели. Суть «цифрового» знания отображается через смыслы y- и z-переменных.

В решаемой Прямой Смысловой Задаче элементы матрицы $Z_{44,9}$ [12-21] интерпретируются как квадраты коэффициентов корреляций:
$corr^2(z_1,y_j)+corr^2(z_2,y_j)+corr^2(z_3,y_j)+corr^2(z_4,y_j)+corr^2(z_5,y_j)+corr^2(z_6,y_j)+corr^2(z_9,y_j)=1$, i=1,…,9; j=1,…,9.

При когнитивном моделировании смыслов z-переменных, не используется формула дисперсии z-переменной: $corr(z_j,z_j)=1$, но используются доминирующие значения дисперсий $cov(y_j,y_j)=\lambda_j$, j=1,…, ℓ, где ℓ<9 равен числу y-переменных. А каждая y-переменная подвергается когнитивному осмыслению, требующему от эксперта глубокого знания сути ситуации, дополнительных фактов, реально влиявших на валидный фактор, проявления которого измеряются значениями y-переменной.

Матрица (z,y)-корреляций - другое название матрицы собственных векторов C_{nn}. Цифровые знания– это фразы, имеющие обоснованные смыслы (являются новым знанием, дополняющим известные знания[12-21]), источником их являются цифры в числах из таблиц (матриц числовых данных), векторов, подчиняющихся определенным равенствам многомерной математической модели.

Решаемая здесь ПСЗ отличается от Обратной Смысловой Задачи [20-21]. В Обратной Спектральной Задаче для анализа значений элементов матрицы $C_{9,9}$ решается одна из Оптимизационных Задач [9-11]. Имеются несколько вариантов ОСЗ и Оптимизационных Задач. В 7 исследуемых таблицах данных [1,2,13-15] используются 2 математические модели (ПМ ГК, ОМ ГК). А на заключительном этапе извлечения 7 разных знаний из предметных областей: телекоммуникации, педагогика, финансы, ГЦБ, социальная экономика - применяются 7 отличающиеся друг от друга когнитивные модели, творчески конструируются (с применением формализованных правил) 7 множеств когнитивных смыслов 7 множествам z–переменных.

Здесь ниже нами будут использованы названия-смыслы следующих 9 анализируемых коррелированных z-переменных:

Смысл(z_1)=(T1)=«Валовый Региональный Продукт»;

Смысл(z_2)=(T5)=«Совокупный доход до налого обложения предприятий и организаций»;

Смысл(z_3)=(T8)=«Количество предприятий»;

Смысл(z_4)=(T9)=«Объем промышленного производства на 1 предприятие)»;

Смысл(z_5)=(T10)=«Расходы предприятий на услуги связи на 1 предприятие»;

Смысл(z_6)=(T12)=«Дебиторская задолженность и задолженность по обязательствам на 1 предприятие»;

Смысл(z_7)=(T14)=«Инвестиции в основной капитал на 1 пре»;

Смысл(z_8)=(T15)=«Количество междугородных разговоров на 1 предприятие»;

Смысл(z_9)=(Y2)=«Количество ОТА для предприятий».

Исходные данные объединены в таблицу данных, состоящую из m=44 значений n=9 неценовых факторов (показателей) {T1,T5,T8,T9, T10,T12,T14,T15, Y2}. Мы рассматриваем те 8

неценовые факторы, те внешние причины, производственные, финансовые, налоговые показатели, которые на практике влияют на Y - показатель Y2=«количество ОТА для предприятий». Таблица данных размерности 44*9 значений 9-ти показателей, где m=44 равно числу месяцев, в течение которых проводились регистрации значений этих показателей.

Отличие 2-х показателей друг от друга состоит в «количестве междугородных разговоров на 1 предприятие», проведенных с применением «количеств ОТА для предприятий». Чем больше количеств разговоров (T15), тем больше доходов у предприятий (T5). Чем больше количеств ОТА (Y2), тем больше количеств разговоров (T15). Наше моделирование применялось в ситуации когда микроэкономическая теория была не применима для прогнозирования спроса на услуги связи. Традиционно влияющие на спрос факторы, например, такие как «Доля прибыльных предприятий» (T4) не влияли на спрос видов услуг связи.

Уменьшение количества прибыльных предприятий в 90-х годах происходило под воздействием нерыночных факторов таких как привлечение иностранные инвестиций только в нефтяную отрасль, где прибыль появляется позже.

Для предприятий появились новые внезапно ставшими доступными услуги РК [1,2]. Например, новыми услугами связи в 1999-2001 годах, стали «Интернет Dial для предприятий», «Количество ОТА для населения», «Количество ОТА для предприятий», «Междугородный трафик для предприятий» (T15) и многие другие. Новый вид услуги связи (новый источник доходов для оператора связи) «Количество междугородных разговоров на 1 предприятие» (T-фактор T15) и «Количество ОТА для населения» нами исследованы по реальным данным в статье [1]. Переменная Y6 анализируется совместно с T-факторами {T1, T5,T8, T9, T10, T12, T14, T15, Y2} [1]. На новый вид услуги связи «количество ОТА в домах жителей» (Y2) статистически существенно влияет другой набор T-факторов {T1, T5,T8, T9, T10, T12, T14, T15, Y2}.

Ниже рассмотрим другое множество T-факторов {T1,T5,T8,T9,T10, T12, T14,T15,Y2}, соответствующих 9 z-переменным. Для этих z-переменных были 4 новых существенных y-переменных, соответствующих новому набору факторов, имена-смыслы которых будут когнитивно определены. Этапу когнитивного моделирования предшествует математическое моделирование. Используя матрицу собственных векторов $C_{9,9}$ (Таблица 2) преобразуем матрицу $Z_{44,9}$ и имеем матрицу y-переменных $Y_{44,9}=Z_{44,9}C_{9,9}$. Применяемые далее при математическом и когнитивном моделировании параметры имеют следующие значения. Анализируем элементы спектра $_{99}$=diag(4.7744, 1.3342, 1.1041, 0.7510, 0.5567, 0.2632, 0.1413, 0.0750, 0.0001), значения его f–параметров: $f_1(\Lambda_{9,9})=9$, $f_2(\Lambda_{9,9})=15.7628$, $f_3(\Lambda_{9,9})=39255.9600$, $f_5(\Lambda_{9,9})=0.9974E-06$, $f_6(\Lambda_{9,9})=630.2400$. Число ℓ доминирующих собственных чисел равно 4. Доля этих 4 собственных чисел {4.7744,1.3342, 1.1041,0.7510} равна $f_4(\Lambda_{9,9})=0.8849$. В статье [1] эта доля была равна 0.9056. общий уровень значений коэффициентов корреляции виден по значению $\varphi=0.4967$. В первых 4-х столбцах ($\ell=4$) используем значимые» веса» c_{kj}, удовлетворяющие условию $abs(c_{kj})\geq 0.4$, $k\in\{1,2,3,4,5,6,7,8,9\}$, $j=1,2,3,4$.

В статье [1] эти величины принимали другие значения: $f_1(\Lambda_{77})=9$, $f_2(\Lambda_{77})=17.5105$, $f_3(\Lambda_{77})=5462.3340$, $f_4(\Lambda_{77})=0.9056$, $f_5(\Lambda_{77})=0.3390E-05$, $f_6(\Lambda_{77})=66.1478$, $\Lambda_{77}=diag(\lambda_1,\ldots\lambda_7)$=diag(3.5817, 1.8984, 0.8594, 0 .5795, 0.0493,0 .0310,0.0007).

Используемые при когнитивном моделировании весомые «веса» и их «координаты» сравниваются в Таблице 2.

Когнитивное моделирование зависимости количеств ОТА на предприятиях РК от изменений структур их доходов и расходов

Рассмотрим те неценовые факторы T1,T5,T8,T9,T10,T12,T14,T15, те внешние причины, которые на практике влияют на показатель (Y2)=«Количество ОТА для предприятий». Эти существенные показатели для предприятий, вынужденных работать в новых условиях. Ранее в советское время отсутствовавшие в перечне регистрируемых социально-экономических факторов. Они соответствуют новым потребностям предприятий.

Найдем смыслы y-переменных, имея формулы зависимостей между одной y- и множеством z-переменных. Так как по критерию Джоллиффа число доминирующих собственных чисел равно $L_{Дж}=4$, т.е. доля дисперсий первых 4-х y-переменных (обобщенных факторов) равна 0.8849%. Вариабельность наших 9 T-факторов примерно равна вариабельности 4-х y-переменных (обобщенных факторов) y_1, y_2, y_3, y_4, каждая из которых равна линейной комбинации некоторого числа z-переменных. Каждая z-переменная соответствует своему T-фактору. Используя матрицу собственных векторов $C_{9,9}$ преобразуем матрицу $Z_{44,9}$ и имеем матрицу y-переменных $Y_{44,9}=Z_{44,9}C_{9,9}$. В первых 4-х столбцах Таблицы 2 используем значимые «веса» c_{kj}, удовлетворяющие условию $abs(c_{kj})\geq 0.4005$, $k\in\{1,2,3,4,5,6,7,8,9\}$, $j=1,2,3,4$. Этому критерию удовлетворяют 4 y-переменные, имеющие соответственно 4 доминирующие значения

дисперсий disp(y_1)=λ_1=4.7744, disp(y_2)=λ_2=1.3342, disp(y_3)=λ_3=1.1041, disp(y_4)= λ_4=0.7510:

y_1=0,4158*z_1+0,4084*z_4+0,4005*z_6+0,4223*z_8+ ε_1,

y_2=0,4341*z_2-0,6339*z_9+ ε_2,

y_3 = 0,8395*z_3+ +ε_3,

y_4 = -0,4315*z_3+ 0,8033*смысл(z_7) +ε_4,

где ε_1,ε_2,ε_3,ε_4 – погрешности, связанные с отбрасыванием z–переменных с малыми весами (Таблица 2).

Смыслы валидных показателей (y-переменных) определим когнитивно (смотрите [2-4]). Они соответствуют названиям статей управленческого учета предприятия. Для менеджеров управленческий учет удобен по сравнению с бухгалтерским учетом.

Решим Прямую Смысловую Задачу, где значение элемента z_{kj} матрицы $Z_{44,9}$, [6] интерпретируется как изменчивость «веса» c_{kj}: z_{ik}*c_{kj}, а имя j–ой z-переменной (независимо от номера k значения z_{kj}) задает (определяет) смысл j–ой z-переменной. Решим Прямую Смысловую Задачу [6-10] и когнитивно сконструируем одну фразу, имеющую смысл, равный сумме смыслов только тех z-переменных, которые имеют заметные веса из совокупности весов $corr^2(z_1,y_j)$,$corr^2(z_2,y_j)$, $corr^2(z_3,y_j)$, $corr^2(z_4,y_j)$, $corr^2(z_5,y_j)$, $corr^2(z_6,y_j)$, $corr^2(z_7,y_j)$, $corr^2(z_8,y_j)$, $corr^2(z_9,y_j)$, j=1,…,9. Полученный общий смысл для y-переменной тесно связан со смыслами заметных по весомости z-переменных [6-10]. В результате, как показано ниже, конструируем новый, отличающийся смыслом от заданных смыслов z-переменных цифровой смысл-знание в виде фразы, имеющей обоснованный смысл. Соотношения Прямой Смысловой Задачи имеют вид:

смысл(y_1)=0,4158*смысл(z_1)+0,4084*смысл(z_4)+ 0,4005* смысл(z_6)+0,4223* смысл(z_8),

смысл(y_2)=0.4341*смысл(z_2)-0.6339*смысл(z_9),

смысл(y_3)= 0.8395* смысл(z_3).

смысл(y_4)=-0.4315*смысл(z_3)+0.8033*смысл(z_7),

Когнитивно определим смыслы левых частей этих равенств, зная смыслы слагаемых из правых частей данных соотношений. Сумма смыслов не должна давать когнитивный диссонанс (конфликтующих представлений) смыслу соответствующей y-переменной.

Для сравнения количеств ОТА в офисах предприятий с количеством ОТА в квартирах населения приведем соотношения из математической модели [2]:

y_1=0.5267*z_2+0.5206*z_4+0.5108*z_7 + ε_1,

y_2=-0.3768*z_1+0.4719*z_3+0.6371*z_5+ +0.4608*z_6+ε_2,

y_3=0.6177*z_1+0.5502*z_3+0.4241*z_6+ε_3,

где ε_1,ε_2 ε_3, – погрешности, связанные с отбрасыванием z–переменных с малым весом.

Так как неизвестный смысл(y_1) равен сумме известных смыслов: смысл(y_1)=0.4158*смысл(z_1)+0.4084*смысл(z_4) +0.4005*смысл(z_6)+0.4223*смысл(z_8), то смысл(y_1) выражаем фразой «мощность предприятия». Это – короткая фраза, возможна и другое сочетание слов, более детально передающие смысл переменной y_1. При этом, как видно из формулы для смысл(y_1) смысловые доли содержат: по вкладу в ВРП - на 17.29% ($0,4158^2$=0.17288964), по объему промышленного производства» - на 16.679% ($0,4084^2$= 0.16679), по имеющимся дебиторской задолженности и задолженности по обязательствам на 1 предприятие (T12,с весом 0.4005^2=16,04%). Для смысл(y_1) смысловые доли содержат сопоставимые расходы на «Количество междугородных разговоров на 1 предприятие (T15, с весом в 17,8%). Вес обобщенного фактора y_1 является наибольшим среди 4-х вычисленных весов у 4-х выявленных обобщенных факторов y_1,y_2,y_3 ,y_4 . Он равен 53% (4,7744/9=0,53). Этому валидному показателю поставим в соответствие группу крупных предприятий (КП).

Второй обобщенный фактор y_2 некоррелирован с первым и интерпретируется как: «совокупный доход до налогообложения и расходы предприятий на ОТА». Смысл этой y-переменной равен сумме смыслов: смысл(y_2)=0.4341*смысл(z_2)-0.6339*смысл(z_9). Смысл «совокупный доход до налогообложения предприятий и организаций состоит из доли доходов (переменная z_2) (с весом $0,4341^2$=18.84) минус доля расходов на ОТА (с весом $0,6339^2$=40.18%. Вес расходов на телефонные разговоры превышает вес доходов:. 40.18%>18.84%. Доля этого обобщенного фактора y_2 равна 12,27% (1,3342/9=12.27%). Этому валидному показателю поставим в соответствие группу крупных средних приятий (СП).

Третья y-переменная y_3 некоррелирована с первыми 2-мя y-переменными y_1, y_2 и интерпретируется также как z-переменная z_3: смысл(y_3)=0.8395*смысл(z_3) - «количество предприятий». Вес этой z-переменной z_3 равен $0,8395^2$=70.476%). Доля y-переменной y_3 (обобщенного фактора) равна 12% (1.1041/9=0,122677) из 100%.

Этому валидному показателю поставим в соответствие группу мелких предприятий (МП).

Четвертая y-переменная y_4 некоррелирует с первыми 3-мя y-переменными. Смысл этой y-переменной равен сумме смыслов: смысл(y_4)=-0,4315*смысл(z3)+0,8033*смысл(z7)- «Бюджетные инвестиции в основной капитал предприятий». Имеются в виду инвестиции в государственные предприятия образования и

здравоохранения Республики Казахстан. «Вес» числа предприятия в 2 раза меньше, чем «вес» объема инвестиций (0,4315<0,8033). Это отражает наличие небольшого числа бюджетных инвестиций. Этому валидному показателю поставим в соответствие группу бюджетных предприятий (БП).

Доля этого обобщенного фактора y_4 равна 8% (0,7510 /9=0,083). Таким образом доля обремененных инвестициями и не приносящих дохода (c_{24}=-0.4315) предприятий (БП) равна 8%. Доля y-переменной y_4 (обобщенного фактора) равна 8.34% (λ_4/9=0.7510/9=8,34%) из 100%. Так как смысл z-переменной z_4 равен смыслу фразы «совокупный доход до налогообложения предприятий и организаций», а «вес» c_{24}=-0.4315 имеет отрицательный знак, то слово «доход» меняем на слово «расход». Отсюда в когнитивном смысле y-переменной y_4 появляется дополнительный смысл «не приносящих дохода». Уточненный смысл валидной y-переменной y_4 таков: «Количество предприятий с бюджетными инвестициями в основной капитал и не приносящих дохода». Таких уточнений можно привести несколько, они выявляют слабовыраженные экономические «детали». Например, значение «веса» c_{64}=-0.1905 при z-переменной z_4 добавляет еще один смысл «наличие кредиторской задолженности» с «весом» c_{64}=-0.1905.

В итоге мы видим, что на каждый из обобщенных факторов воздействует свой набор Т-факторов: на y_1 влияют Т-факторы Т4, Т6, Т8 ,на y_2 влияет Т-фактор Т2, Т9, на y_3 влияет Т-фактор Т3. В соответствии с своим набором Т-факторов каждый обобщенный фактор интерпретируется с привлечением внешней внемодельной информации.

Таблица 1. Корреляционная матрица $R_{9,9}$

	1	2	3	4	5	6	7	8	9
1	1,0000	**0,5969**	0,0791	**0,9978**	**0,5532**	**0,6965**	**0,5131**	**0,8155**	0,1919
2	0,5969	1,0000	0,3341	**0,5803**	0,2085	**0,4723**	0,2898	**0,3723**	0,1095
3	0,0791	0,3341	1,0000	0,0188	0,1730	0,1023	0,1397	0,0411	0,0405
4	0,9978	0,5803	0,0188	1,0000	**0,5349**	**0,6787**	**0,5030**	**0,8052**	0,1681
5	0,5532	0,2085	0,1730	0,5349	1,0000	**0,6645**	0,2741	**0,6410**	**0,5140**
6	0,6965	0,4723	0,1023	0,6787	0,6645	1,0000	**0,3501**	**0,7817**	**0,6820**
7	0,5131	0,2898	0,1397	0,5030	0,2741	0,3501	1,0000	**0,6114**	0,1415
8	0,8155	0,3723	0,0411	0,8052	0,6410	0,7817	0,6114	1,0000	**0,5414**
9	0,1919	0,1095	0,0405	0,1681	0,5140	0,6820	0,1415	**0,5414**	1,0000

Таблица 2. Матрица собственных векторов $C_{9,9}$

	1	2	3	4	5	6	7	8	9
1	**0.4158**	0.2379	-0.1953	-0.1463	0.1756	0.2315	0.0734	-0.3411	-0.7105
2	0.2734	**0.4341**	0.2611	**-0.4315**	-0.447	-0.4727	0.1794	0.1644	-0.0024
3	0.0783	0.2729	**0.8395**	0.2227	0.2131	0.3411	-0.0003	-0.0381	0.0427
4	**0.4084**	0.2382	-0.2518	-0.1642	0.1735	0.2086	0.0734	-0.3374	0.7023
5	0.3318	-0.3083	0.1471	0.0158	0.6411	-0.5983	0.0523	0.0357	-0.0009
6	**0.4005**	-0.2493	0.0902	-0.1905	-0.1647	0.1298	-0.814	0.1625	0.0047
7	0.2733	0.2289	-0.1314	0.8033	-0.2734	-0.2935	-0.1605	-0.1541	0.0016
8	**0.4223**	-0.1109	-0.1406	0.1843	-0.0236	0.3123	0.3805	0.7161	0.0021
9	0.2365	**-0.6339**	0.2424	0.0088	-0.4248	0.0677	0.3481	-0.4208	0.0127

Заключение

Мы выделили 4 независимых обобщенных факторов со смыслами: «мощность предприятия» (КП, 53%), «совокупный доход до налогообложения и расходы предприятий на ОТА (СП, 12,27)», «количество предприятий (МП,8%)», «количество предприятий с бюджетными инвестициями в основной капитал и не приносящих дохода (БП, 12%)». Эти валидные показатели отражают присутствие в РК большого

количества крупных доходных и недоходных предприятий с инвестициями в основном капитале. Фразы с этими ключевыми словами в те годы присутствовали в протоколах разных экономических, политических мероприятий международного уровня. Доля проявления таких 4-х обобщенных факторов равна 85.27% (53%+12,27%+12%+8%). Заметим, что доля 3-х обобщенных факторов для населения [1] равна 85.53%(=49.43%.+21.7071%+14.3943%). Этот факт предстоит рассмотреть отдельно.

В структуре 1-го обобщенного фактора (««мощность предприятия» пропорции между «вкладом в ВРП» (17,29%), объемом промышленного производства» (16,679%), размером задолженностей (16,04%), расходами на междугородные разговоры (17,8%) практически одинаковы. Таких пропорций в странах с развитой экономикой не бывает. А отражает «ненормальную» ситуацию, в которую втянулись предприятия. Соответственно у населения сложились пропорции с доходами и расходами [1]: «Доля новых расходов населения на «ввод в действие жилых домов» (причина установки ОТА в домах), доля денежных доходов (заработной платы) равна 27,10%, доля расходов на новый вид услуги по «нерыночным» тарифам равна 25.7%, при этом доля затрат на новое меньше долей привычных затрат» [2].

Структура 2-го обобщенного фактора-««совокупный доход до налогообложения и расходы предприятий на ОТА», отражает затраты на интенсивные переговоры (для прибыльной работы своих производств) персоналов предприятий, но при этом доля расходов предприятий превышает долю доходов: 40.18%>18.84%.

Структура наименьшего по весу 4-го обобщенного фактора отражает не только количество, но и имена предприятий, если учесть информацию из СМИ. Количество предприятий с привлеченными инвестициями в основной капитал» в 2 раза меньше, чем «вес» объема инвестиций (0,4315< 0,8033), что отражает хороший инвестиционный климат в Казахстане. Сформулируем практические выводы. Они в 90-х годах применены в ОАО "Казахтелеком" .

1. Отдельные телефонные аппараты установили 4 категории ЮЛ-клиентов, независимых друг от друга – КП(17,8%), СП(40.18%), МП, БП. Их независимость дает возможность ОАО "Казахтелеком" стимулировать (повышать спрос на ОТА по каждому из 4 категории ЮЛ-клиентов) как посредством тарифов на виды услуг связи, так и при помощи регулирования неценовых факторов, влияющих на 1, на 2, на 3 или на 4 категории клиентов по каждому региону Казахстана в отдельности.

2. Наибольшую долю (53,4%) ЮЛ-клиентов ОАО "Казахтелеком" с отдельным телефонным аппаратом составляют Мощные предприятия по вкладу в ВРП (на $0{,}4158^2$=0,17288964=17,29%), по объему промышленного производства» (на $0{,}4084^2$ =16,679%), имеющего как z_6=T12 –дебиторскую задолженность и задолженность по обязательствам на 1 предприятие (с весом $0{,}4005^2$=16,04%), так и сопоставимые расходы на z_8=T15–количество междугородных разговоров на 1 предприятие (с весом в 17,8%). Необходимо усилить работу с предприятиями категории КП.

3. 2-ое место занимают ЮЛ-клиенты, у которых «совокупный доход до налогообложения (с весом (долей) $0{,}4341^2$=18,84) минус расходы на ОТА (с весом (долей) $0{,}6339^2$=40,18%)». Вес этих предприятий равен 15%.

4. 3-ье место занимают все действующие и не действующие предприятия бюджетной и частной сферы. Их доля составляют 12,26% от общего числа ЮЛ-клиентов, имеющих отдельный телефонный аппарат. Необходимо разработать маркетинговые мероприятия с предприятиями категории СП.

5. 4-ое место занимают обремененные инвестициями и не приносящие дохода предприятия. Их доля равна 8%.

Остальные 11,5% ЮЛ-клиентов с ОТА не выявлены в данном исследовании.

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FORMULA OF THE KEY INDICATOR "POWER OF A PROFITABLE ENTERPRISE"

Abstract: *For a group of large enterprises, a valid variable formula is obtained that is cognitively modeled as a KPI of "profitable enterprise capacity". The formula depends on one calculated and 4 measured indicators of the enterprise. Using the example of matrix $Z_{44.5}$ of standardized real data, the values of 5 coefficients (weights) of the linear function were calculated: the shares "by contribution to the KP group" (by 0.4605^2=21.21%), the shares of the volume of industrial production "(by 0.4679^2 = 21.89%), the share of expenses for the number of long-distance calls (by 0.4411^2 = 19.45%), the share of cash costs for the traffic of international calls (by 0.4605^2 = 21.21%), the share of receivables and payables (by 0.4030^2 = 16.24%). The formula is applicable in cases of unsuitability of microeconomic theory.*

Key words: *formula, the key indicator, "power of a profitable enterprise".*
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ФОРМУЛА КЛЮЧЕВОГО ПОКАЗАТЕЛЯ «МОЩНОСТЬ ПРИБЫЛЬНОГО ПРЕДПРИЯТИЯ»

Аннотация: *Для группы крупных предприятий получена формула валидной переменной, когнитивно моделируемой в качестве ключевого показателя «мощность прибыльного предприятия». Формула зависит от одной вычисляемой и 4-х измеряемых показателей предприятия. На примере матрицы $Z_{44,5}$ стандартизованных реальных данных вычислены значения 5 коэффициентов (весов) линейной функции: доли «по вкладу в группу КП» (на $0,4605^2$=21,21%), доли объема промышленного производства» (на $0,4679^2$=21,89%), доли расходов на проведение количества междугородных (на $0,4411^2$=19,45%), доли денежных расходов на трафик международных разговоров (на $0,4605^2$=21,21%), доли дебиторской и кредиторской задолженностей (на $0,4030^2$=16,24%). Формула применима в случаях непригодности микроэкономической теории.*

Ключевые слова: *формула, ключевой показатель, «мощность прибыльного предприятия».*

Введение

Процессы системной дезинтеграции, происхо дившие в экономике, социальной структуре, общественной и политической сфере привели к появлению в Казахстане небольшого количества крупных прибыльных доходных предприятий с инвестициями в основном капитале. В неприятные, непонятные ситуации попали как работодатели, так и менеджеры, наемные работники и население страны. Но имелись предприятия, сумевшие «выстоять» в 90-ые годы. Наличие «мощных» предприятий выявлено нами ниже при когнитивном моделировании числовых данных по показателям, сильно влияющим на выявленный нами (скрытый) валидный показатель «мощность предприятий».

Появление новых, ранее отсутствовавших услуг связи между предприятиями, способствовало бурное развитие инфраструктурных элементов. Стали доступны для Правительства финансовые показатели компаний, появились крупные нефтедобывающие налогоплательщики[1]. «После либерализации инвестиционного законодательства иностранный капитал стал играть весомую роль в экономике. В 1994–1995 годах из-за рубежа было привлечено более трех миллиардов долларов. Возникли новые частные корпорации с иностранным капиталом «Казахмыс», «Евразийская группа», «Казцинк» и другие. Вместе с инвесторами пришли и новые технологии, и современный менеджмент. Благодаря специальным инвестиционным проектам удалось переломить еще недавно казавшуюся безнадежной ситуацию в промышленности. Производство возрождалось на глазах казахстанцев, и их уверенность, что кризис будет преодолен, день ото дня крепла»[2].

«Инвестиции в основной капитал, несмотря на некоторое оживление во второй половине 90-х гг., составляли в 2000 г. соответственно всего лишь 29% от уровня 1990 г. Норма валового накопления основного капитала в 1995–1999 гг. в среднем составляла 18,8% при максимальном значении 22,3% в 1995 г.[9] При этом в инвестициях ведущую роль играл иностранный капитал. В 1996 г. наметились первые позитивные сдвиги: был зарегистрирован положительный рост ВВП, выросло промышленное производство. В 1997–2000 гг. капиталовложения ежегодно увеличивались более чем на 30%. Столь заметный рост объяснялся в первую очередь чрезвычайно низкой исходной базой. Инвестиции в основной капитал лишь частично компенсировали сокращение производственных фондов и были недостаточны для создания основы для поддержания устойчивых положительных темпов роста в среднесрочной и долговременной перспективе. Таким образом, с середины десятилетия казахская экономика (с перерывом на 1998г.[10]) демонстрировала устойчивые положительные темпы роста ВВП и восстановление производства в промышленности. Однако к 2000 г. не был восстановлен уровень производства, зафиксированный на 1990 г. Острой проблемой 1990-х гг. была ситуация с неплатежами: просроченная кредиторская задолженность в 1995–1998 гг. не опускалась ниже 35% ВВП. В 1998 г. объем просроченной кредиторской задолженности более чем в 4 раза превышал денежную массу[11]. К началу 1999 г. задолженность по заработной плате достигала 69% от суммы наличных денег, обращающихся в национальной экономике[12]. Во второй половине 1990-х гг. более половины предприятий и организаций страны были убыточны, а 30% предприятий промышленности производили так называемую «отрицательную добавленную стоимость». (сноски [8,9,10,11,12] относятся к тексту ресурса[3]

Иные аспекты одновременной «трансформации государственной собственности, приватизация, налаживание производственных связей, поиск партнеров, рынков и субъектов сбыта, создание финансовой, транспортной инфраструктуры, законодательной базы и многое другое» описаны в статье [1].

Ранее мы провели когнитивное моделирование [2] изменений цен и денежных расходов населения, когнитивное моделирование [3] зависимости количеств ОТА в квартирах от изменений доходов и расходов населения. Провели анализ новых Т-факторов, влияющих на количество отдельных телефонных аппаратов (ОТА) в офисах предприятий Казахстана от изменений структур доходов и расходов предприятий, включая расходы на новые виды услуг [3].

В микроэкономической теории существуют формулы зависимости одной переменной от других переменных. Среди этих переменных нет переменной с именем-смысом «мощность предприятия».

Эта новая переменная является валидной переменной. «При валидном измерении измеряется именно то, что нужно, а не другое» [4]. В 90-х годах в крупных предприятиях нужно было измерять именно то, что нужно, а не измерять KPI (Key Performance Indicators) - показатель, пригодный для экономик развитых стран. В связи с развалом СССР в экономике РК появились новые «поведенческие» связи, отношения между предприятиями, новые измерители работ предприятий, нуждающихся во всем и в инвестициях тоже. Для Правительства РК, для инвесторов, для партнеров по бизнесу нужен показатель, как-то заменяющий KPI.

Ниже мы предлагаем использовать валидный показатель и предлагаем модель цифровизации одного валидного показателя предприятия и множества прибыльных предприятий, к которому принадлежит это предприятие. Степень прибыльности предприятия измеряется в непрерывной числовой шкале и является внешним параметром для предприятия. Для формулы

[1] https://kursiv.kz/news/tendencii-i-issledovaniya/2018-11/top-40-bystrorastuschikh-kompaniy-kazakhstana

[3] www.cc-sauran.kz/rubriki/economika/47-kazahstan-prichiny-i-proyavleniya-ekonomicheskogo-spada-v-1990-gody.html

используются 4 внутренних измеряемых существенных показателя. Слово «валидные» имеет смысл «отражать действительность» (reflect, represent, validity,reality, permissibility, valid, effectivenes). Преимуществом валидного показателя является то, что при валидном измерении измеряется именно то, что нужно, а не другое мало что «говорящее» о конкретном предприятии. Так как мы рассматриваем нетипичные для микроэкономической теории условия, то нам потребуется познать процессы для ранее неизвестных реальных и искусственных систем. Некоторое представление о наших озабоченностях дают объяснения превышения расходов над доходами населения, изложенные в статье [2].

Для предприятий актуальны вопросы формализации предметной области «валидное измерение ключевых показателей», рассматриваемой в данной статье [2].

Ниже нами найдена формула, выведенная не из теории для стран переходного периода, а из таблицы реальных данных за 44 месяцев 1999-2002 годов. Из этой эмпирической формулы зависимости «мощности предприятий» от изменений объемов промышленного производства, дебиторской, кредиторской задолженностей, международных, междугородных разговоров на предприятиях РК построены наглядные графики 5 динамик существенных показателей, где динамика одного 6-го валидного показателя – возрастающая, а динамики 4-х влияющих на него волатильных показателей имеют растущие тренды (Рисунок 1).

Формула зависимости «мощности предприятий» от изменений объемов промышленного производства, дебиторской, кредиторской задолженностей, трафика международных, количества междугородных разговоров на предприятиях Казахстана.

Здесь изложим описание разработанной когнитивной модели зависимости международного трафика, количества междугородных разговоров (новые виды услуг связи в 90-х годах) от изменений объемов промышленного производства, дебиторской и кредиторской задолженностей предприятий РК. Отметим: международные разговоры учтены в минутах, междугородные разговоры – не в минутах, а в количестве таких разговоров: кратких или недолгих.

Исходные данные по существенным Т-факторам, влияющих на показатель «мощности прибыльных предприятий» Казахстана

Анализ значений большого количества Т-факторов, теоретически влияющих на «количество ОТА для предприятий» [1] показал пригодность значений только 9 существенных для нашего моделирования Т-факторов и значений одной Y-переменной Y2 («количество ОТА для предприятий»).

В статье [1] мы рассмотрели 9-мерную выборку значений $X^0_{mn}=\{x^0_{i,j}\}$, m=44, n=9, значений 8 Т-факторов (первые 8 столбцов X^0_{mn}) и m=44 значений показателя «количество ОТА для предприятий» (9-ый столбец X^0_{mn}). Размерности 8 Т-факторов {T1, T5,T8, T9, T10, T12, T14, T15, Y2} разные. После вычисления значений средних и стандартных отклонений для 9 переменных получили матрицу $Z_{44,9}$ стандартизованных безразмерных значений 9 z–переменных. Полученную матрицу $Z_{44,9}$ преобразовали в матрицу $Y_{44,9}=Z_{44,9}C_{99}$ значений y–переменных, решив Прямую Задачу АГК [5] и применяя соотношения из модели Хотеллинга-Жанатаева [5,6]. Для вычисленной корреляционной матрицы $R_{9,9}$ решили Прямую Спектральную Задачу (ПСЗ): $R_{9,9}=>(\Lambda_{9,9}C_{9,9})$. Здесь спектр матрицы $R_{9,9}$ имел вид Λ_{99}=diag(4.7744,1.3342,1.1041,0.7510,0.5567, 0.2632, 0.1413,0.0750,0.0001), а матрица $C_{9,9}$ имела вид, отличающийся от нашей матрицы C_{55} (Таблица 2). Матрицы C_{55} тоже является матрицей собственных векторов, но имеет большую долю элементов, по абсолютной величине превосходящих 0.4. ПСЗ - прямая спектральная задача диагонализации известной выборочной корреляционной матрицы $R_{nn}=(1/m)Z^T_{mn}Z_{mn}$, $R_{nn}=R^T_{nn}$. Она решается для симметрической матрицы $R=R^T$, в результате вычисляются 2 матрицы: ортонормированная матрица C_{nn} собственных векторов $\mathbf{c_j}=(c_{1j},c_{2j}\ldots c_{nj})^T$,j=1,…,n, расположенных по её столбцам: $C_{nn}=[c_1|c_2|\ldots|c_n]$, и диагональная матрица $\Lambda_{nn}=diag\ (\lambda_1,\ldots\lambda_n)$. Матрица C_{nn} согласована со спектром $\Lambda_{nn}=diag(\lambda_1,\ldots\lambda_n)$ таким образом, что выполняются равенства $RC=C\Lambda$, $C^TC=CC^T=I_{nn}$, $diag(R_{nn})=(1,\ldots,1)$, $tr(R_{nn})=1+1+\ldots+1=tr(\Lambda_{nn})=\lambda_1+\ldots+\lambda_n=n$, $\lambda_1\geq\ldots\geq\lambda_n\geq0$.

Для нас существенным является наличие только одного доминирующего собственного числа $\lambda_1\geq0$. При этом важна доля величины числа $\lambda_1\geq0$ в сумме $\lambda_1+\ldots+\lambda_n=$ n, $\lambda_1\geq\ldots\geq\lambda_n\geq0$:$\lambda_1/n\geq0.7$. Паре $(\lambda_1,\mathbf{c_1})$ соответствует одна y–переменная. Формула этой y–переменной [7] при наличии выделенных заметных «весов» при всех z–переменных может быть обоснована как новый ключевой показатель предприятия. Для этой y-переменной ее смысл формируют когнитивные смыслы 5 измеряемых показателей (z–переменных), анализируются компоненты только одного собственного вектора. Каждый из 5 смыслов измерямых показателей влияет на смысл показателя «мощности прибыльных

предприятий». При анализе вычисленных значений элементов спектра $\Lambda_{nn}=diag(\lambda_1,\ldots\lambda_9)$ такого что: $RC=C\Lambda$, $C^TC=CC^T=I_{nn}$, $diag(R_{nn})=(1,\ldots,1)$, $tr(R_{nn})=1+1+\ldots+1=tr(\Lambda_{nn})=\lambda_1+\ldots+\lambda_n=n=5$, $\lambda_1\geq\ldots\geq\lambda_n\geq0$, число $\ell=1$ доминирующих собственных чисел определено по критерию Джоллиффа: $\lambda_\ell\geq sqrt(2)/2$. Так как $\Lambda_{99}=diag(3.9125, 0.6944, 0.2476, 0.1456, 0.0000)$, то имеем одно равенство между одной y-переменной и 5 z-перемеными. Равенство $\ell=1$ и достаточно большая доля этого собственного числа $\{\lambda_1=3.9125\}$равна 78.25% (3.9125/5=0.7825) служат основанием для рассмотрения только одного равенства $y_1=0.4605*z_1+0.4679*z_2+0.4030*z_3+0.4411*z_4+0.4605*z_5$ из 5-ти имеющихся.

Входными величинами для этой формулы служат 1-ое собственное число $\lambda_1=3.9125$ и компоненты соответствующего ему 1-го собственноговектора $\mathbf{c_1}=(0.4605, 0.4679, 0.4030, 0.4411, 0.4605)^T$ из матрицы $C_{5,5}$ (Таблица 2), вычисленной по корреляционной матрице $R_{5,5}$ (Таблица 1). Элемент $r_{15}=r_{51}$ равен 1.0000:$r_{15}=r_{51}=1$. Это- числовой индикатор наличия мультикол линеарности двух z-переменых z_1 и z_5. Графическая иллюстация мультиколлинеарности двух z-переменых z_1 и z_5 выражается в параллельности их кривых (Рисунок 1).

Таблица 1. Корреляционная матрица R_{55}

	1	2	3	4	5
1	1.0000	0.7969	0.5552	0.6439	1.0000
2	0.7969	1.0000	0.6787	0.8052	0.7969
3	0.5552	0.6787	1.0000	0.7817	0.5552
4	0.6439	0.8052	0.7817	1.0000	0.6439
5	1.0000	0.7969	0.5552	0.6439	1.0000

Таблица 2. Матрица собственных векторов C_{955}

	1	2	3	4	5
1	**0.4605**	-0.4758	-0.2035	0.1420	0.7071
2	**0.4679**	0.0132	0.5397	-0.6997	-0.0000
3	**0.4030**	0.6026	-0.6520	-0.2221	-0.0000
4	**0.4411**	0.4289	0.4480	0.6486	-0.0000
5	**0.4605**	-0.4758	-0.2035	0.1420	-0.7071

Модели и задачи

Для вычисленной корреляционной матрицы $R_{5,5}$ (Таблица 1) решам Прямую Спектральную Задачу (ПСЗ):$R_{5,5}=>(\Lambda_{5,5},C_{5,5})$. ПСЗ - прямая задача диагонализации известной выборочной корреляционной матрицы R_{nn}. Она решается для симметрической матрицы $R=R^T$, в результате вычисляются 2 матрицы: ортонормированная матрица C_{nn}, n=5, собственных векторов $\mathbf{c_j}=(c_{1j},c_{2j}\ldots c_{nj})^T$, расположенных по её столбцам: $C_{nn}=[c_1|c_2|\ldots|c_n]$, согласованная со спектром $\Lambda_{nn}=diag(\lambda_1,\ldots\lambda_n)$ таким образом, что $RC=C\Lambda$, $C^TC=CC^T=I_{nn}$, $diag(R_{nn})=(1,\ldots,1)$, $tr(R_{nn})=1+1+\ldots+1=tr(\Lambda_{nn})=\lambda_1+\ldots+\lambda_n=n$, $\lambda_1\geq\ldots\geq\lambda_n\geq0$. Для анализа вычисленных значений элементов спектра $\Lambda_{5,5}=diag(\lambda_1,\ldots\lambda_5)$ такого что: $RC=C\Lambda$, $C^TC=CC^T=I_{nn}$, $diag(R_{nn})=(1,\ldots,1)$, $tr(R_{nn})=1+1+\ldots+1=tr(\Lambda_{nn})=\lambda_1+\ldots+\lambda_n=n$, $\lambda_1\geq\ldots\geq\lambda_n\geq0$, а также для вычисления f-параметров применяем Математическую Модель Спектра Неизвестной Корреляционной Матрицы [8]. Для анализа вычисленных значений элементов матрицы C_{nn} собственных векторов $\mathbf{c_j}=(c_{1j},c_{2j}\ldots c_{nj})^T$, где его компоненты далее будут когнитивно интерпретироваться. Матрица $C_{5,5}$ теперь в рамках разработанной когнитивной модели зависимости «мощности прибыльных предприятий» от изменений объемов промышленного производства, дебиторской, кредиторской задолженностей, международных, междугородных разговоров на предприятиях Республики Казахстан интерпретируется также как и статьях [1-3, 9-14]. Матрица $C_{5,5}$ одновременно является и матрицей коэффициентов комбинационных связей [9]. «Комбинационная связь-связь между одной y-переменной и n z-перемеными, представляется в виде вектора $\mathbf{c_j}=(c_{1j},c_{2j}\ldots c_{nj})^T$. По определению [9] она является единственным решением ПСЗ и является матрицей собственных векторов. В задачах цифровизации [4,15,19-24] в задачах извлечения знаний из цифровых данных,

представленных в виде таблицы типа «объекты-свойства»[1-4,16-24] анализу подвергаются коэффициенты комбиинационной связи из матрицы $C_{5,5}=[cor(z_i,y_j)]$, i=1,…,5; j=1,…,5, (z_i,y_j)-корреляций. В Обратных Спектральных Задачах [12-14] матрицы коэффициентов комбинационной связи C_{nn}, n=6, моделируются [12-15]. «Компоненты вектора $\mathbf{c_j}=(c_{1j},c_{2j}…c_{nj})^T$ комбинационной связи подчиняются условиям $c^2_{1j}+c^2_{2j}+c^2_{3j}+c^2_{4j}+c^2_{5j}=1$,j=1,…,5[1-6,9-24]. В решаемой нами ниже Прямой Смысловой Задаче значение элемента z_{kj} матрицы $Z_{44,5}$, [6] интерпретируется как изменчивость [9] z_{ik} «веса» c_{kj}:z_{ik}*c_{kj}. Если y_{i2}=-0.3768*z_{i1}+…, y_{i2}=0.6177*z_{i1}+…, то в i-ых объектах $y_{i.}$ «веса» из матрицы C_{55} имеют разные значения изменчивостей $(z_{11},…,z_{m1})$ из матрицы $Z_{44,5}$ для одного фиксированного «веса», например, для «веса» c_{12}=-0,3768. Для другого «веса» c_{13}=0,6177 в i-ых объектах $y_{i.}$ имеются те же m разных значений изменчивостей z_{11} ,…,z_{m1}. Для элементов j-го столбца матрицы C_{55} выполняются равенства вида $c^2_{1j}+c^2_{2j}+c^2_{3j}+c^2_{4j}+c^2_{5j}=1$,j=1,…,5. Они выполняются при решении Прямой Спектральной Задачи [6], а при решении Прямой Смысловой Задачи [1-3,16-24] преобразуются в равенства другого вида:
$corr^2(z_1,y_j)+corr^2(z_2,y_j)+corr^2(z_3,y_j)+corr^2(z_4,y_j)+corr^2(z_5,y_j)=1$, j=1,…,5. Для элементов i-ой строки нашей матрицы C_{55} (Таблица 2) в Прямой Смысловой Задаче применяемые равенства из ПСЗ имеют вид:
$corr^2(z_i,y_1)+corr^2(z_i,y_2)+corr^2(z_i,y_3)+corr^2(z_i,y_4)+corr^2(z_i,y_5)=1$. Но учитываются в когнитивном осмыслении только заметные по весу слагаемые.

Смысл z-переменной задан в ее имени (в Прямой Смысловой Задаче) или (ОСЗ) конструируется (в Обратной Смысловой Задаче [4,20,21,23,24]). Каждая z-переменная такова, что обладает весомым «весом». Значения 5 «весов» при значениях этих 5 z-переменных по абсолютной величине превышают 0.4030. По шкале Чэддока пороговое значение 0.403 относится к интервалу «умеренных» корреляций. Поэтому мы должны использовать смыслы z-переменных из множества $\{z_1,z_2,z_3,z_4,z_5\}$ для когнитивного конструирования фразы-смысла y-переменной с номером 1.

Мы ниже решаем Прямую Смысловую Задачу [1,2,16-24], строим когнитивную карту [16-18] и когнитивно конструируем одну фразу, имеющую смысл, равный сумме смыслов 5 z-переменных, которые имеют заметные веса из совокупности весов
$corr^2(z_1,y_j)$,$corr^2(z_2,y_j)$,$corr^2(z_3,y_j)$,$corr^2(z_4,y_j)$, $corr^2(z_5,y_j)$; j=1.

Полученный общий смысл для y-переменной должен быть тесно связан со смыслами заметных по весомости z-переменных [6,16-24]. В результате, как показано ниже, конструируем новый, отличающийся смыслом от заданных смыслов z-переменных, цифровой смысл-знание в виде фразы, имеющей обоснованный смысл. Источниками знания являются числа из таблиц (матриц $Z_{44,5}$, C_{55} числовых данных), из векторов $\mathbf{c_j}=(c_{1j},c_{2j}…c_{nj})^T$, $j\in\{1,…,5\}$, подчиняющихся определенным равенствам многомерной математической модели. Суть «цифрового» знания отображается через смыслы y- и z-переменных.

В решаемой Прямой Смысловой Задаче элементы матрицы $C_{5,5}$ [16-24] интерпретируются как квадраты коэффициентов корреляций: $corr^2(z_1,y_j)+corr^2(z_2,y_j)+corr^2(z_3,y_j)+corr^2(z_4,y_j)+corr^2(z_5,y_j)=1$, $c^2_{ij}=corr^2(z_5,y_j)$, j=1.

Матрица (z,y)-корреляций - другое название матрицы собственных векторов C_{55}. Цифровые знания – это фразы, имеющие обоснованные смыслы (являются новым знанием, дополняющим известные знания [16-24]), источником их являются цифры в числах из таблиц (матриц числовых данных), векторов, подчиняющихся определенным равенствам многомерной математической модели.

Решаемая здесь Прямая Смысловая Задача отличается от Обратной Смысловой Задачи [23-24]. В Обратной Смысловой Задаче для анализа значений элементов матрицы $C_{5,5}$ решалась бы одна из Оптимизационных Задач [12-14]. Имеются несколько вариантов Оптимизационных Задач. В 8 исследуемых таблицах данных [1-3,16-19,22] используются 2 математические модели (ПМ ГК, ОМ ГК). А на заключительном этапе извлечения 8 разных знаний из предметных областей: телекоммуникации, педагогика, финансы, ГЦБ, социальная экономика - применяются 8 отличающиеся друг от друга когнитивные модели, творчески конструируются (с применением формализованных правил) 8 множеств когнитивных смыслов 8 множествам z–переменных.

Здесь ниже нами будут использованы названия-смыслы следующих 5 коррелированных z-переменных:

Смысл(z_1)=(T4)=«Доля прибыльных предприятий»;

Смысл(z_2)=(T9)= «Объем промышленного производства на 1 предприятие»;

Смысл(z_3)=(T12)=«Дебиторская задолженность и задолженность по обязательствам на 1 предприятие;

Смысл(z_4)=(T15)=«Количество междугородных разговоров на 1 предприятие»;

Смысл(z_5)=((Y 4)= «Международный трафик на СНГ (минуты) для предприятий».

Международные телефонные переговоры с представителями предприятий из стран независимых государств (СНГ) в 90-х годах могли

вести только менеджеры прибыльных предприятий Республики Казахстан. Поэтому Т-фактор Т4=«доля прибыльных предприятий» включено в множество Т-факторов {T4,T9,T12,T15}, статистически значимо влияющих на другой показатель Z4=« Международный трафик на СНГ (минуты) для предприятий».

Это множество Т-факторов отличается от множества Т-факторов {T1, T5,T8, T9, T10, T12, T14, T15,Y2}, влияющих на показатель Y2 [2]. Так как коэффициент корреляции $corr(z_1,z_5)=1$, то динамика показателя Т4=«Доля прибыльных предприятий» (переменная z_1) совпадает с динамикой показателя Т15=«Количество междугородных разговоров на 1 предприятие» (переменная z_5) (Рисунок 1).

Фактор Т4 («Доля прибыльных предприятий») является измерителем для всего множества прибыльных предприятий, он косвенно характеризует компании №1 и №2. Собственными показателями компании являются T9,T12,T15. Эти и другие сведения, сопутствующие ситуациям 90-х годов будут использованы ниже при когнитивном моделировании.

Мы будем использовать опыт когнитивного моделирования, где исходной таблицей реальных данных [2, Таблица 1] была матрица из 44 значений Т-факторов {T1,T5,T8,T9,T10,T12, T14,T15,Y2} [2]. Наши анализируемые данные частично содержатся в таблице реальных данных из статьи [2,Таблица 1] Была выявлена структура доходов и расходов 4-х типов предприятияй, а также найдена зависимость количеств ОТА на предприятиях РК от изменений выявленной структуры их доходов и расходов. Полученные когнитивные знания использовали смыслы следующих 9 z-переменных.

Смысл(z_1)=(T1)=«Валовый Региональный Продукт»;

Смысл(z_2)=(T5)=«Совокупный доход до налого обложения предприятий и организаций»;

Смысл(z_3)=(T8)=«Количество предприятий»;

Смысл(z_4)=(T9)=«Объем промышленного произ водства на 1 предприятие)»;

Смысл(z_5)=(T10)=«Расходы предприятий на услуги связи на 1 предприятие»;

Смысл(z_6)=(T12)=«Дебиторская задолженность и задолженность по обязательствам на 1 предприятие»;

Смысл(z_7)=(T14)=«Инвестиции в основной капитал на 1 пре»;

Смысл(z_8)=(T15)=«Количество междугородных разговоров на 1 предприятие»;

Смысл(z_9)=(Y2)=«Количество ОТА для предприятий».

Для перечисленных выше моделей и задач исходными данными для входных величин из формулы «мощности прибыльных предприятий» являются числовые элементы таблицы данных, состоящей из m=44 значений n=5 неценовых факторов (показателей) {T4,T9,T12,T15,Z4}. Мы рассматриваем те 4 неценовые факторы, те внешние причины, производственные, финансовые показатели, которые на практике влияют на Y-показатель Y4=«Международный трафик на СНГ для предприятий». Таблица данных размерности 44*5 значений 5-ти показателей, где m=44 равно числу месяцев, в течение которых проводились регистрации значений этих показателей.

Отличие 2-х показателей Y2, Y4 друг от друга состоит в количестве (частоте) междугородных разговоров на одном предприятии, проведенных через телефонные аппараты в кабинетах офисов предприятий. Предполагается, что чем больше будет затрачено минут при деловых разговорах (Т15), тем больше доходов у предприятий (Т5). Чем больше количеств ОТА (Y2), тем больше количеств разговоров (Т15). Наше моделирование применялось в ситуации когда микроэкономическая теория была не применима для прогнозирования спроса на услуги связи. Традиционно влияющие на спрос факторы, например, такие как «Доля прибыльных предприятий» (Т4) не влияли на спрос на виды услуг связи.

Уменьшение количества прибыльных предприятий в 90-х годах происходило под воздействием нерыночных факторов таких как привлечение иностранные инвестиций только в нефтяную отрасль, где прибыль появляется позже.

Для предприятий появились новые внезапно ставшими доступными услуги РК [2,3]. Например, новыми услугами связи в 1999-2002 годах, стали «Интернет Dial Up для предприятий», «Количество ОТА для населения», «Количество ОТА для предприятий», «Междугородный трафик для предприятий» (Т15) и многие другие. Новый вид услуги связи (новый источник доходов для оператора связи) «Количество междугородных разговоров на 1 предприятие» (Т-фактор Т15) и «Количество ОТА для населения» нами исследованы по реальным данным в статье [2]. Переменная Y6 анализируется совместно с Т-факторами {T1, T5,T8, T9, T10, T12, T14, T15, Y2} [2]. Здесь в нашей статье мы рассматривали новый вид услуги связи «Международный трафик на СНГ для предприятий» (Y4). На аналогичный показатель Y2 статистически существенно влиял [2] другой набор Т-факторов {T1,T5,T8,T9,T10,T12,T14,T15,Y2}. Наша анализируемая пара матриц (Λ_{55},C_{55}): спектр Λ_{55}=diag (3.9125,0.6944,0.2476,0.1456,0.0000) и матрица собственных векторов C_{55} (Таблица 2) являются более богатыми источниками

(индикаторами наличия извлекаемых знаний). Спектр Λ_{55} для «*международных* трафиков» и спектр Λ_{66}=diag(4.6798,0.7050,0.3390,0.2249,0.0500, 0.0013) для «*междугородних* трафиков» [16] имеют одинаковое число ℓ=1 доминирующих элементов. В статье [16] приведено значение доли f_4, равное $\lambda_1/6$=4.6798/6=0.7800) и формула y-переменной y_1=0.4479*z_1+0.3961*z_2+0.4444*z_4+0.4129*z_5+0.4259*z_6 +ε1. Коэффициентами этой линейной комбинации являются только заметные компоненты 1-го собственного вектора $\mathbf{c}_1=(0.4479,0.3961,0.3051,0.4444,0.4129,0.4259)^T$. Когнитивный ее смысл этой y-переменной передается фразой «мощность предприятия»: смысл(y_1)=0.4479*смысл(z_1)+0.3961*смысл(z_2)+ 0.4444*смысл(z_4)+0.4129*смысл(z_5)+ 0.4259*смысл(z_6).

Но мы ниже рассматриваем другое множество T-факторов {T4,T9,T12,T15,Y4}, соответствующих 5 z-переменным. Спектр Λ_{55}=diag(3.9125,0.6944, 0.2476,0.1456, 0.0000) для «*международных* трафиков» и заметные компоненты 1-го собственного вектора $\mathbf{c}_1=(0.4605,0.4679,0.4030,0.4411,0.4605)^T$. Для 5 z-переменных была найдена 1 новая и существенная (ее доля f_4 равна $\lambda_1/5$=3.9125/5=0.7825) y-переменная смысл(y_1)= 0.4605*смысл(z_1)+0.4679*смысл(z_2)+0.4030*смысл(z_3)+0.4411*смысл(z_4)+ 0.4605* смысл(z_5). Когнитивный ее смысл передается фразой «мощность предприятия», равной сумме смыслов 5 z-переменных. Для «*международных* трафиков» и для «*междугородних* трафиков» [16] соответствующие спектры имеют одинаковое число ℓ=1 доминирующих элементов, а смысл одной y-переменной когнитивно формулируется одной фразой.

Разработку когнитивной модели начнем с построения когнитивной карты. По известным смыслам микроэкономических, телекоммуникационных показателей ({T4,T9,T12,T15,Z4}) проведем когнитивный анализ. «В соответствии с целью «когнитивный подход в моделировании ориентирован на то, чтобы активизировать интеллектуальные процессы исследователя (субъекта) и помочь ему зафиксировать свое представление проблемной ситуации в виде формальной модели. В качестве такой модели обычно используется когнитивная карта ситуации. Методология когнитивного моделирования (предложена Аксельродом [25]) основана *на моделировании субъективных представ лений экспертов о ситуации* и включает: методологию структуризации ситуации, включающую модель представления знаний эксперта в виде ориентированного орграфа (когнитивной карты [(Z,Y),C], где (Z,Y=ZC)– 2 множества факторов (n z- и n y-переменных) ситуации, C_{nn} – множество измерений n^2 причинно-следственных отношений между факторами ситуации) и одного уравнения связи между n z- и одной y-переменными [16-18], визуализируемые в Когнитивной Карте подмножества факторов с номерами 1,2,3,4,5. Мы конструируем Когнитивную Карту из одного фактор-следствия со своей моделью причинно-следственной зависимости в виде функции $y_{ij}=z_{i1}c_{1j}+z_{i2}c_{2j}+\ldots+z_{in}c_{n1}$, i=1,…,m=44, n=5, где по критерию некоторые из совокупности измеренных (в числах) воздействий ($c_{j1},c_{2j},\ldots,c_{nj}$) на j–ый фактор системы обнуляем [16]. В Когнитивной Карте [16-18] изображаются только те факторы z_{ik}, которые имеют ненулевые «веса» $c_{kj}\neq 0$ отношений между факторами ситуации. Когнитивная интерпретация- совокупность значений и смыслов переменных из Прямой и Обратной моделей главных компонент (ПМ ГК, ОМ ГК [5,6]). Это превышает традиционные дисциплинарные границы с точки зрения подхода. Ниже такому «осмыслению» подвергаются сами элементы искусственной системы – матриц Λ, C, Y этой теории -(ПМ ГК): Z=>(R,C,Λ,Y)), то есть мы интерпретируем символы связи объектов, формулы. При анализе этой сложной ситуации используем параметры и переменные Обратной Задачи симметризаци диагональной матрицы Λ собственных чисел из ОМ ГК[6]: Λ=>(R,C,Y,Z). Из формулировки Обратной Задачи (ОЗ АГК) из ОМ ГК следует, что Обратная Задача: вычисление оптимальной системы «весов» (из матрицы C_{nn}), т.е. вычисление совокупности воздействий $(c_{j1},c_{2j},\ldots,c_{nj})^T$ на j–ый фактор системы (со своей моделью причинно-следственной зависимости в виде функций $y_{ij}=z_{i1}c_{1j}+z_{i2}\ c_{2j}+\ldots+z_{in}c_{nj}$, i=1,…,m, зависит от элементов спектра Λ_{nn}=diag($\lambda_1\ldots,\lambda_n$), $\lambda_1+\ldots+\lambda_n=n$, $\lambda_1\geq\lambda_2\geq\ldots\ \geq\lambda_n>0$, и от параметров спектра Λ_{nn} [3]. Модель главных компонент как частный случай факторного анализа позволяет отразить более глубокую картину динамики значений показателя «мощность прибыльных предприятий».

Программа [26] преобразования данных (матрицы $X^0_{44,6}$) из z–переменных (решается прямая задача анализа главных компонент (ПЗ АГК)) и вычисления матриц R,C,Y,Z анализирует стандартизованную (C,Λ,Y)-выборку ОМ ГК Y=ZC, где Y- решение ПЗ АГК, Z - ассоциированное решение ПЗ АГК, решаемой в ПМ ГК. Каждая выборка Z из ПМ ГК является одной из бесконечного множества (C,Λ,Y)-выборок – решений ОЗ АГК из ОМ ГК. Выборка $Z=YC^T$ из ПМ ГК имеет те же параметры, в точности равные параметрам C, Λ, Y из ОМ ГК. Эта программа рассчитала 3 параметра (C,Λ,Y)-выборки: собственные числа Λ_{66}=diag (3.9125,0.6944,0.2476,0.1456, 0.0000), C_{55}–матрица

собственных векторов (Таблица 2), элементы 0.4605,0.4679,0.4030,0.4411,0.4605 ее 1-го столбца образуют линейную комбинацию. Наличие одной линейной комбинации, а не большего числа, является причиной для обоснования ее как ключевого показателя. Матрицу $Y_{44,5}$ не приводим. Расчеты проведем с применением ППП «Спектр» [26]. Сперва получаем цифровые результаты, затем – проводим когнитивное моделирование.

Используя матрицу собственных векторов C_{55} (Таблица 2) преобразуем матрицу z-переменных $Z_{44,5}$ и имеем матрицу y-переменных $Y_{44,5}=Z_{44,5}C_{55}$. Применяемые далее при математическом и когнитивном моделировании параметры имеют следующие значения. Анализируем элементы спектра Λ_{55}=diag(3.9125,0.6944,0.2476,0.1456,0.0000), значения его f–параметров: $f_1(\Lambda_{9,9})=5$, $f_2(\Lambda_{55})=15.8722$, $f_3(\Lambda_{55})=26.8760$, $f_5(\Lambda_{9,9})=0.09791$, $f_6(\Lambda_{55})=10.1400$. Число ℓ доминирующих собственных чисел равно 1. Доля этого собственного числа {3.9125} равна $f_4(\Lambda_{55})=0.7825$. В статье [1] эта доля была (при $\ell=1$) равна $f_4(\Lambda_{66})=0.78$. Общий уровень значений коэффициентов корреляций виден по значению $\varphi=0.7431$. В первом столбце ($\ell=1$) используем только значимые» веса» c_{kj}, удовлетворяющие условию $abs(c_{kj})\geq 0.4$:0.4479, 0.3961, 0.3051, 0.4444, 0.4129, 0.4259

Формула измерения «мощности прибыльного предприятия»

Формула зависимости «мощности прибыльных предприятий» должна иметь содержательный смысл, соответствующий измеряемому показателю. Единицы измерения у измеряемой характеристики предприятий нет. Значение функции зависит от изменений объемов промышленного производства, дебиторской, кредиторской задолженностей, международных, междугородных разговоров на предприятиях. Смысл линейной комбинации смыслов z-переменных (формулы) равен сумме смыслов z-переменных и конструируется как описано выше. Значение и смысл этой функции целесообразно применять как ключевой показатель работы предприятия в условиях, описанных выше. Обоснование формулы проведено в терминах методологии когнитивного моделирования [25]. Слово «когнитивное моделирование» означает моделирование и цифровизацию взаимосвязей показателей (свойств объектов, явлений) посредством известных значений параметров и неизвестных переменных в формулах, символической знаковой системы, фраз из слов, передающих смыслы свойств, смысл комбинации смыслов свойств объектов, которые восприни маются нами, связывают микроэкономические показатели предприятий с макроэкономическими показателями Казахстана и позволяют составить представление о предприятиях. Рассмотрим те неценовые Т-факторы {T4,T9,T12,T15}, те скрытые внешние причины, которые на практике влияют на показатель (Y2)=« Международный трафик на СНГ (минуты) для предприятий». Эти существенные показатели для прибыльных предприятий, работающих в новых условиях. ранее в советское время отсутствовавшие в перечне регистрируемых социально-экономических факторов. Они соответствуют новым потребностям предприятий.

Мы опираемся на смыслы 4-х Т-факторов. Интересуемся только прибыльными предприятиями. Из их характеристик нас интересуют показатель объем выпуска промышленной продукции и неизбежные для любого промышленного производтвадства задолженности. Задолженности бывают двух видов - дебиторская и кредиторская. Формул зависимостей объема продукции от вида задолженности нет и не бывает. Здесь в статье мы не интересуемся такой формулой. Но мы нашли соотношение между ними при применении нового вида телекоммуникационной связи между менеджерами многих организаций-партнеров по выпуску сложной продукции. Частая связь нужна для согласования моментов поставки и проиводства необходимого. Международный () и междугородний трафики по телефону обеспечивают ранее нереализируемую частость деловых переговоров, передач по факсу копий документов.

Когнитивное моделирование зависимости международного трафика от изменений объемов промышленного производства, дебиторской и кредиторской задолженностей предприятий РК.

Найдем смысл y-переменной, имея формулу зависимостей между одной y- и множеством z-переменных $y_1=0.4605*z_1+0.4679*z_2+0.4030*z_3+0.4411*z_4+0.4605*z_5$.

По критерию Джоллиффа число доминирующих собственных чисел равно $L_{Дж}=1$, т.е. доля дисперсий только одной y-переменной (валидной переменной) равна 0.7825%. Вариабельность наших 4 Т-факторов примерно равна вариабельности одной y-переменной (обобщенного фактора) y_1, которая равна линейной комбинации 5 z-переменных. Каждая z-переменная соответствует своему Т-фактору. Используя элементы первого столбца матрицы собственных векторов C_{55} преобразуем матрицу $Z_{44,5}$ и имеем матрицу y-переменных $Y_{44,5}=Z_{44,5}C_{55}$. В первом столбце матрицы C_{55} (Таблица 2) используем значимые «веса» c_{kj}, удовлетворяющие условию $abs(c_{k1})\geq 0.4005$,

k=1,2,3, 4,5. Этому критерию удовлетворяет одна y-переменная $y_1=0.4605*z_1+0.4679*z_2+0.4030*z_3+0.4411*z_4+0.4605*z_5$, имеющая доминирующее значение дисперсии $disp(y_1)=\lambda_1=3.9125$.

Смысл валидного показателя (модельной y-переменной) определим когнитивно (смотрите [1-3]). Он не соответствует общепринятым названиям статей управленческого учета предприятия. Это новый ключевой показатель предприятия. Менеджерам, инвесторам, партнерам предприятия интересна положительная динамика изменений его значений по месяцам, кварталам, годам. Наличие этого ключевого показателя среди других ключевых показателей (KPI удобен для менеджеров. Управленческий учет предпочтителен по сравнению с бухгалтерским учетом.

Решим Прямую Смысловую Задачу для формулы y-переменной $y_1=0.4605*z_1+0.4679*z_2+0.4030*z_3+0.4411*z_4+0.4605*z_5$, где значение элемента z_{kj} из матрицы $Z_{44,5}$, [6] интерпретируется как изменчивость «веса» c_{kj}: $z_{ik}*c_{kj}$, а имя j–ой z-переменной (независимо от номера k значения z_{kj}) задает (определяет) смысл j–ой z-переменной. Решим Прямую Смысловую Задачу [16-18] $смысл(y_1)=0.4605*смысл(z_1)+0.4679*смысл(z_2)+0.4030*смысл(z_3)+0.4411*смысл(z_4)+0.4605*смысл(z_5)$ и когнитивно сконструируем одну фразу, имеющую смысл, равный сумме смыслов 5 z-переменных, имеющих заметные веса из совокупности весов $corr^2(z_1,y_j)$,$corr^2(z_2,y_j)$, $corr^2(z_3,y_j)$, $corr^2(z_4,y_j)$, $corr^2(z_5,y_j)$, j=1. Полученный общий смысл для y-переменной будет тесно связан со смыслами заметных по весомости z-переменных [1-3,16-18]. В результате, как показано ниже, конструируем новый, отличающийся смыслом от заданных смыслов z-переменных цифровое знание в виде фразы, имеющей обоснованный смысл: «мощность прибыльного предприятия». Соотношения Прямой Смысловой Задачи имеют вид:

$смысл(y_1)=0.4605*смысл(z_1)+0.4679*смысл(z_2)+0.4030*смысл(z_3)+0.4411*смысл(z_4)+0.4605*смысл(z_5)$. Когнитивно определим смысл левой частей этого равенства, зная смыслы слагаемых из правых частей данных соотношений. Сумма смыслов не должна дать когнитивный диссонанс (конфликтующих представлений) смыслу соответствующей y-переменной. Так как $\ell=1$, и доля дисперсий одного обобщенного фактора равна 0.7800 (78%), то вариабельность наших 5 z-переменных примерно равна вариабельности y-переменной y_1, которая равна линейной комбинации z-значений соответствующих z-переменных и содержательно интерпретируется «мощность прибыльного (на $0,4605^2=21,21\%$) предприятия по объему промышленного производства» (на $0,4679^2=21,89\%$), имеющего большое количество расходов на трафик междугородных y=(Z3) (на $0,4411^2=19,45\%$) и трафик международных разговоров Z4 (на $0,4605^2=21,21\%$), а также имеющего весомую долю «Дебиторской задолженности и задолженности по обязательствам» (на $0,4030^2=16,24\%$). Вес этого ключевого показателя является наибольшим и равен 78% (3,9125/5=0,7825). Остальные обобщенные факторы y_2, y_3, y_4, y_5 имеют малую долю изменчивости (долю информатив нности) и также не интерпретируются по аналогичным причинам, приведенным в предметных областях [1-3,16-18].

В итоге мы видим, что на единственный обобщенный фактор y_1 воздействует набор 4 T-факторов T4,T9, T12,T15 и Z4. Относительные доли их участия в формировании обобщенного фактора y_1 следующие: 21,21%+21,89%+16,24%+19,45%+21,21% = 100%.

В Таблице 3 приведены 44 значений 5 z-переменных и 44 значений валидного показателя, вычисленного по формуле $y_1=0.4605*z_1+0.4679*z_2+0.4030*z_3+0.4411*z_4+0.4605*z_5$, где значение элемента z_{kj} взяты из матрицы $Z_{44,5}$ (Таблица 3). Порядковые номера 1,2,3,…,44 строк в Таблице 1 соответствуют номерам месяцев 1999-2002

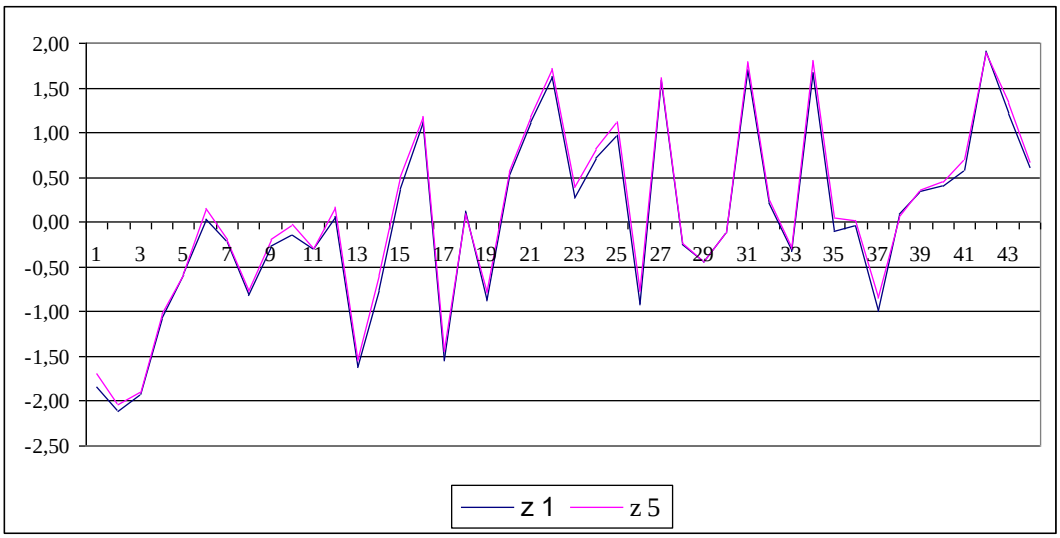

Рисунок 1. Кривые значений двух z-переменых z_1 и z_5, удовлетворяющих условию $corr(z_1,z_5)=r_{15}=1$

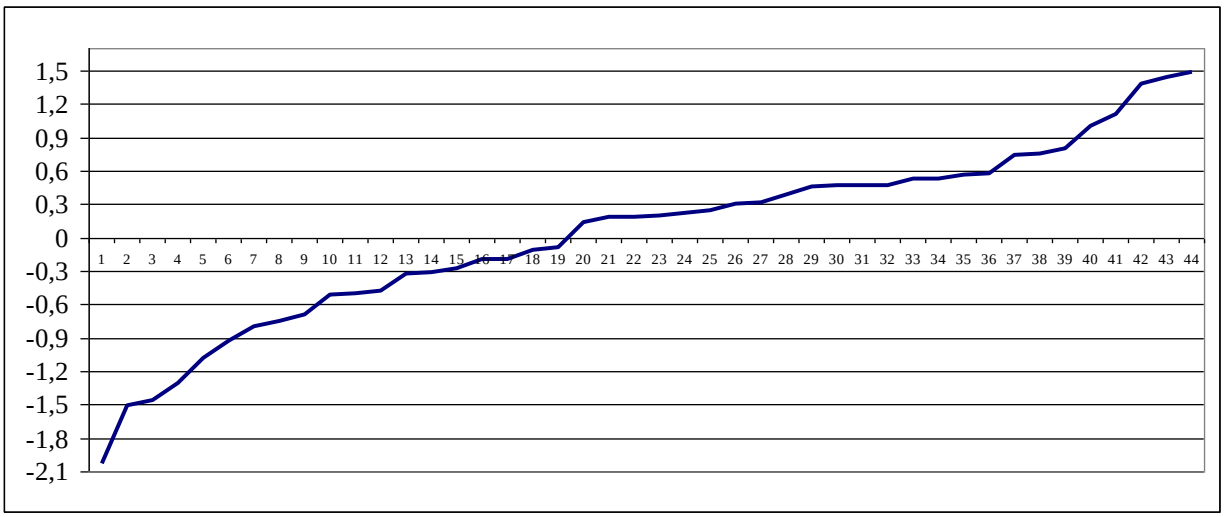

Рисунок 2. Динамика ключевого показателя «мощности прибыльных предприятий»

Таблица 3. Матрица значений 5 z-переменных и вектор значений ключевого показателя «мощность прибыльных предприятий»

	z 1	z 2	z 3	z 4	z 5	y=
1	-1.8476	-1.5931	-2.3553	-2.6121	-1.6952	-2.0240
2	-2.1190	-1.9006	-1.8540	-1.8325	-2.0422	-1.5128
3	-1.9219	-2.5614	-1.6065	-1.8461	-1.9096	-1.4605
4	-1.0694	-1.3987	-1.7898	-1.3590	-1.0266	-1.3032
5	-0.5796	-1.5705	-1.3515	-1.1913	-0.5752	-1.0800
6	0.0316	-0.7560	-0.6749	-1.5839	0.1497	-0.9267
7	-0.2166	-0.6007	-1.4979	-0.4516	-0.2034	-0.8013
8	-0.8107	-0.7214	-1.3799	-0.4882	-0.7784	-0.7537
9	-0.2604	-0.1716	-1.2089	-0.5442	-0.1851	-0.6908
10	-0.1512	0.1796	-0.7731	-0.5910	-0.0273	-0.5105
11	-0.2873	-1.1376	-0.6101	-0.5516	-0.2873	-0.4998
12	0.0618	-0.7832	0.0111	-1.1754	0.1600	-0.4801

13	-1.6193	-1.1776	-0.1649	-0.6898	-1.5427	-0.3262
14	-0.7539	0.2013	-0.3717	-0.5664	-0.5931	-0.3114
15	0.3694	0.4391	-0.2228	-0.5667	0.5132	-0.2734
16	1.1197	0.2822	-0.3481	-0.1547	1.1758	-0.1961
17	-1.5444	-0.6943	-0.0635	-0.5252	-1.4348	-0.1923
18	0.1186	-0.8512	-0.2310	0.0086	0.0911	-0.1150
19	-0.8818	-1.0265	0.6206	-0.8657	-0.7791	-0.0845
20	0.5298	0.6983	-0.4633	0.7038	0.5683	0.1425
21	1.1241	0.3471	0.2391	0.1758	1.1744	0.1845
22	1.6244	1.0618	0.0985	0.2681	1.7127	0.1878
23	0.2729	-0.0221	0.7519	-0.3393	0.3845	0.2003
24	0.7207	0.0508	0.8130	-0.3366	0.8232	0.2160
25	0.9744	1.2892	0.2161	0.1905	1.1224	0.2413
26	-0.9142	-0.0474	0.7411	-0.1725	-0.7729	0.3010
27	1.5786	1.1019	-0.1442	0.8279	1.6135	0.3135
28	-0.2551	0.4129	-0.2502	1.0728	-0.2406	0.3884
29	-0.4421	-0.4290	0.4652	0.5993	-0.4376	0.4550
30	-0.1175	0.1078	0.1640	0.8993	-0.1098	0.4695
31	1.7038	1.2735	0.4259	0.6109	1.7887	0.4709
32	0.2082	0.6775	0.0701	0.9540	0.2514	0.4747
33	-0.3224	-0.1850	0.5762	0.6292	-0.2977	0.5236
34	1.6712	1.3793	0.8155	0.3209	1.8069	0.5254
35	-0.0947	1.3207	0.3779	0.7413	0.0538	0.5666
36	-0.0461	0.4617	0.5199	0.7321	0.0205	0.5699
37	-0.9971	0.6716	0.9175	0.6249	-0.8489	0.7378
38	0.0881	-0.2394	0.7977	1.0213	0.0618	0.7553
39	0.3491	0.3097	0.7524	1.1342	0.3549	0.8049
40	0.4010	0.3340	1.4937	0.8646	0.4554	1.0067
41	0.5783	1.6362	1.1144	1.3427	0.6989	1.1097
42	1.9117	1.3566	1.3478	1.9434	1.9028	1.3849
43	1.2101	1.7326	1.7912	1.4939	1.3222	1.4368
44	0.6048	0.5420	2.2409	1.2842	0.6565	1.4913

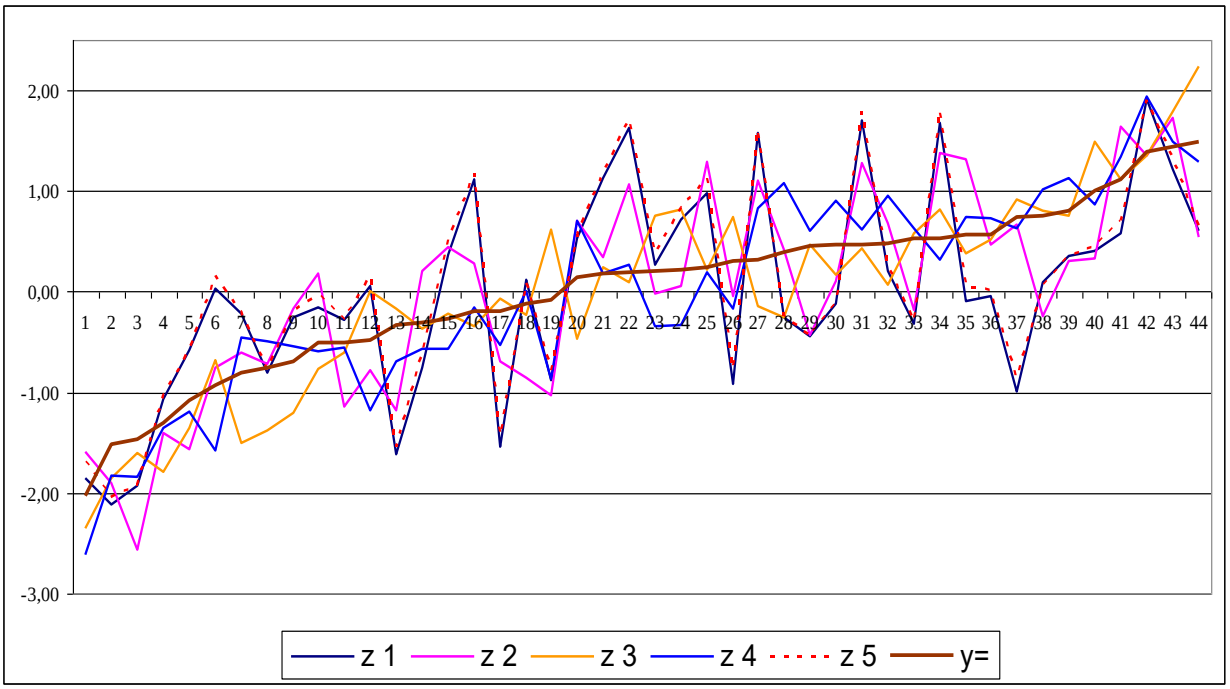

Рисунок 3. Динамика ключевого показателя y=«мощности Прибыльных предприятий» и 5 z-переменных

годов-датам 31.01.1999, 28.02.1999, 31.03.1999,…, 30.08.2002. Значения ключевого показателя «мощность прибыльного предприятия» монотонно возрастают (Рисунок 1), соотствующие им значения 5 z-переменных с растущими трендами колеблются вокруг гладкой кривой «мощность предприятия» (Рисунок 2). Вариабельности z-переменных разные: небольшие – у z-переменной z_3,z_4, большие – у z-переменных z_1, z_2, z_5, что соответствует реальным изменчивостям помесячных отчетных данных. Динамика показателя T4=«Доля прибыльных предприятий» (переменная z_1) совпадает с динамикой показателя T15=«Количество междугородных разговоров на 1 предприятие» (переменная z_5) (Рисунок 1). Размахи значений 3-х переменных z_2, z_3, z_4 примерно одинаковы, они более короткие, чем размах переменной z_1.

Сравним значения ключевого показателя «мощность прибыльного предприятия» для 2-х предприятий. Пусть 1-ое предприятие (компания 1) имеет свои значения z_1=1,2101, z_2=1,7326, z_3=1,7912, z_4=1,4939, z_5=1,3222. Тогда компания 1 имеет значение ключевого показателя «мощность прибыльного предприятия», равное 3,35763951. Пусть 2-ое предприятие (компания 2) имеет свои значения z_1=1,2101, z_2=0,1078, z_3=0,1640, z_4=0,8993, z_5=1,3222. Тогда оно имеет значение ключевого показателя «мощность прибыльного предприятия», равное 1,218863387. Компания 1 и компания 2 имеют общий статус «z_1=1,2101», те оба работают в период времени когда T4=«Доля прибыльных предприятий» имела значение, равное 1,2101. эти компании принадлежат однородному множеству. Но каждая компания имеет свои личные достижения, выражаемые посредством значений (z_2=1,7326, z_3=1,7912, z_4=1,4939) и (z_2=0,1078, z_3=0,1640, z_4=0,8993). Компания 2 имеет меньшую мощность, так как показатели «Объем промышленного производства на 1 предприятие» и «Дебиторская задолженность и задолженность по обязательствам на 1 предприятие имеют меньшие значения.

Других примеров разных уровней совокупности показателей, влияющих на значение ключевого показателя «мощность прибыльного предприятия» существует много. Тренд кривой «мощность прибыльных предприятий» аппроксимизируется «слабым» квадратным уравнением $y=0.0003x^2+0.0388x-0.5616$, $R^2=0.9552$, или линейным уравнением: $y=0.0517x - 0.6433$, $R^2 = 0,9515$.

Показатель «мощность предприятия» был выявлен в предыдущем исследовании [3]: «так как смысл(y_1) равен сумме известных смыслов: смысл(y_1)=0.4158*смысл(z_1)+0.4084*смысл(z_4)+ 0.4005*смысл(z_6)+0.4223*смысл(z_8), то смысл(y_1) выражалась фразой «мощность предприятия». Это – короткая фраза, возможна и другое сочетание слов, более детально передающие смысл переменной y_1. При этом, как видно из формулы

для смысл(y_1) смысловые доли содержат: по вкладу в ВРП - на 17.29% ($0{,}4158^2$=0.17288964), по объему промышленного производства» - на 16.679% ($0{,}4084^2$= 0.16679), по имеющимся дебиторской и кредитор ской задолженностям (Т12,с весом 0.4005^2=16,04%)». Это – выводы по реальным данным из статьи [3].

Из наших анализируемых реальных данных видно: для валидной переменной y_1=«мощность предприятия» ее смысловые доли содержат сопоставимые расходы на «количество междугородных разговоров на 1 предприятие (Т15, с весом 17,8%). Вес обобщенного фактора y_1 является наибольшим среди 4-х выявленных обобщенных факторов y_1,y_2,y_3,y_4. Вес y_1 равен 53% (4,7744/9= 0,53). Этому валидному показателю была поставлена в соответствие группа крупных предприятий (КП).

Из наших данных по крупным предприятиям ключевой показатель «мощность прибыльного предприятия» формируется из доли «по вкладу в группу КП» (на 0,4605=21,21%), из доли объема промышленного производства» (на $0{,}4679^2$=21,89%), из доли расходов на количество междугородных (на $0{,}4411^2$=19,45%), из доли расходов на трафик международных разговоров (на $0{,}4605^2$=21,21%), из доли «Дебиторской и кредиторской задолженностей» (на $0{,}4030^2$=16,24%).

Заключение

Мы вычислили «веса» для 4-х зависимых Т-факторов со смыслами, отраженными в формуле «мощности прибыльных предприятий». Эта формула выражает количественную зависимость значения «мощности прибыльных предприятий» от изменений объемов промышленного производства, дебиторской, кредиторской задолженностей, от изменений количеств международных, междугородных разговоров на предприятиях.

В предыдущем исследовании [1] было выявлено, что доля крупных предприятий (доходных и недоходных) составляет 53%. Здесь выше мы исследовали только прибыльные предприятия из множества доходных предприятий. Недоходные предприятия мы не рассматривали, для них не применима выведенная формула «мощности прибыльных предприятий». Также эта формула не применима для других 3-х типов предприятий Республики Казахстан: средних СП, 12,27%), малых (МП,8%), бюджетных (БП, 12%) [1]. Множество доходных предприятий и крупных предприятий было выявлено в статье [1] по измерителю со смыслом: «мощность предприятия» (КП, 53%). Другие 3 когнитивные смыслы 3-х у-переменных относились к другим 3 типам предприятий со смыслами: «совокупный доход до налогообложения и расходы предприятий на ОТА (СП,12,27%)», «количество предприятий (МП,8%)», «количество предприятий с бюджетными инвестициями в основной капитал и не приносящих дохода (БП, 12%)».

Только для прибыльных предприятий (наверняка они крупные) рассматриваемые 4 Т-факторы отражают присутствие в РК небольшого количества крупных прибыльных предприятий с иностранными инвестициями в основном капитале. Фразы с этими ключевыми словами в те годы присутствовали в протоколах разных экономических, политических мероприятий международного уровня. Доля проявления таких 4-х обобщенных факторов равна 85.27% (53%+12,27%+12%+8%). Смысл валидного показателя (модельной у-переменной) определили когнитивно. Смысл «мощности прибыльных предприятий» не соответствует общепринятым названиям статей управленческого учета предприятия. Это - новый ключевой показатель предприятия, причем прибыльного. Менеджерам, инвесторам, партнерам предприятия интересна положительная динамика изменений его значений по месяцам, кварталам, годам. Наличие этого ключевого показателя среди других ключевых показателей (KPI) удобен для менеджеров. Управленческий учет предпочтителен по сравнению с бухгалтерским учетом.

Мы применили познавательный процесс для естественных и искусственных систем. Это превышает традиционные дисциплинарные границы с точки зрения подхода. Преимуществом предлагаемого ключевого показателя «мощность прибыльного предприятия» является возможность вычисления его значений по формуле, возможность учета статуса «прибыльный», учета только существенных Т-факторов. Структура фактора «мощность прибыльных предприятий» равна линейной комбинации значений соответствующих z-переменных и содержит «долю прибыльных (на 0,4605=21,21%) предприятий», долю «по объему промышленного производства» (на $0{,}4679^2$=21,89%), доли по расходам на большое количество междугородных разговоров (на $0{,}4411^2$=19,45%) и на трафик на СНГ (в минутах) международных разговоров (на $0{,}4605^2$=21,21%), а также долю «дебиторской задолженности и задолженности по обязательствам» (на $0{,}4030^2$=16,24%). Вес этого ключевого показателя является наибольшим и равен 78% (3.9125/5=0.7825) среди 5 выявленных математически обобщенных факторов. Только один из них может быть обоснованно служить ключевым показателем.

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THE SOLUTION OF PROBLEMS OF THE THEORY OF ELASTICITY FOR AN ISOTROPIC PHYSICALLY NONLINEAR MATERIAL

Abstract: *The paper presents a solution to physically nonlinear problems of the theory of elasticity for continuous isotropic bodies. The presented solution method is a synthesis of the boundary state method and the small parameter method. As a result of the expansion of the desired characteristics of the stress-strain state into power series, it becomes necessary to solve a number of linear problems in the theory of elasticity. The latter is provided by the boundary state method. The solution of problems and assessment of the accuracy of the results.*

Key words: *Physically nonlinear problems, honey boundary states, small parameter method, boundary value problems, isotropic bodies.*

Language: *English*

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Introduction

The solution of physically nonlinear problems reduces to nonlinear differential equations, the analytical solution of which can be obtained only in the simplest cases. Therefore, various approximate methods for solving physically nonlinear problems and related problems of plasticity are widespread. These methods are based on the linearization of differential equations and are reduced to solving problems of the theory of elasticity. Such methods include: the method of elastic solutions (method A. A. Ilyushin [1]), the method of variable parameters of elasticity, reducing the solution of nonlinear problems to the solution of a number of linear problems of the theory of elasticity for inhomogeneous bodies, the method of sequential loading (step method), based on summing n elastic problems when dividing the external load into n small values.

The aim of the work is to develop a method for constructing the fields of characteristics of a stress-strain state for a homogeneous physically nonlinear isotropic body. The system of interconnected procedures meets its achievement: the correct formulation of the problem, the dimensionlessness (P-theorem), the choice of a solution method, and verification of results.

An effective tool for constructing elastic fields of isotropic and anisotropic bodies has been the modern energy method of boundary states (MGS) [2], which was initially oriented towards computer algebras. Its development in terms of connecting the perturbation method (MGSV) [3] allows you to effectively cope with the features of the physical plan for the environment.

The boundary state method is used to solve a wide class of problems in the theory of elasticity. Thermoelasticity problems were investigated, anisotropic problems were considered, for example, in [4] plane problems of the theory of elasticity for a doubly connected region were solved, and in [5] the

proposed method for solving plane problems was generalized to the spatial case.

A number of works are devoted to solving boundary value problems of the theory of elasticity with the participation of mass forces [6-9]. The peculiarity of the solution is that the elastic field satisfies the given mass and surface forces at the same time.

Below is a methodology for constructing a solution to the spatial problem of physically nonlinear deformation of an isotropic medium.

Statement of the problem and the mathematical model of its solution

A physically nonlinear medium from a homogeneous continuous isotropic material is investigated. In the physically nonlinear theory, as well as in the theory of plasticity, the following concepts are used [10]:
stress intensity

$$\sigma_i = \frac{1}{\sqrt{2}}\sqrt{(\sigma_x-\sigma_y)^2+(\sigma_y-\sigma_z)^2+(\sigma_z-\sigma_x)^2+6(\tau_{xy}^2+\tau_{yz}^2+\tau_{zx}^2)}\ ;$$

strain rate

$$\varepsilon_i = \frac{\sqrt{2}}{3}\sqrt{(\varepsilon_x-\varepsilon_y)^2+(\varepsilon_y-\varepsilon_z)^2+(\varepsilon_z-\varepsilon_x)^2+\tfrac{3}{2}(\gamma_{xy}^2+\gamma_{yz}^2+\gamma_{zx}^2)}\ .$$

The same quantities expressed in terms of principal stresses:

$$\sigma_i = \frac{1}{\sqrt{2}}\sqrt{(\sigma_1-\sigma_2)^2+(\sigma_2-\sigma_3)^2+(\sigma_3-\sigma_1)^2}\ ; \quad (1)$$

$$\varepsilon_i = \frac{\sqrt{2}}{3}\sqrt{(\varepsilon_1-\varepsilon_2)^2+(\varepsilon_2-\varepsilon_3)^2+(\varepsilon_3-\varepsilon_1)^2}\ . \quad (2)$$

The dependence of the stress intensity on the strain intensity is shown in Fig. 1. Curve 1 corresponds to a linear dependence, 2 - nonlinear.

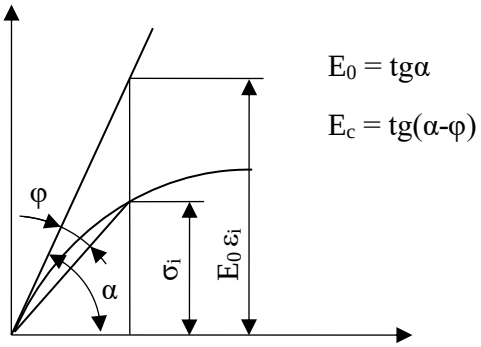

Рисунок 1 - Зависимость между интенсивностями напряжений и деформаций

On the image 1 E_0 – elastic modulus, E_c – secant module, moreover

$$E_c = \frac{\sigma_i}{\varepsilon_i}\ . \quad (3)$$

We introduce a small parameter β characterizing the deviation of the secant modulus from the elastic modulus:

$$E_c = E_0(1-\beta)\ . \quad (4)$$

Let the material have a nonlinear tensile-compression diagram described by the relation

$$\sigma_i = A\varepsilon_i - B\varepsilon_i^k\ , \quad (5)$$

where A, B, k – are material constants determined from experiment. From (4) it follows

$$\beta = 1-\frac{E_{\tilde{n}}}{E_0}\ .$$

Substituting in the last equality the dependencies (3) and (5), we obtain

$$\beta = 1-\frac{A}{E_0}-\frac{B}{E_0}\varepsilon_i^{k-1}. \quad (6)$$

The relationship between stress intensity and strain intensity does not depend on the type of stress state. From this it follows that the dependence $\sigma_i = f(\varepsilon_i)$ is the same for any combination of stresses and strains and can be determined from any experiment, for example, uniaxial tension, in which the main stresses and strains:

$\sigma_1 = \sigma\ ;\ \sigma_1 = \sigma_2 = 0\ ;\ \varepsilon_1 = \varepsilon\ ;\ \varepsilon_2 = \varepsilon_3 = -\nu\varepsilon$,

where ν – Poisson's ratio. Substituting these values in (1) and (2), we obtain

$$\sigma_i = \sigma\ ;\ \varepsilon_i = \frac{2(1+\nu)}{3}\varepsilon\ . \quad (7)$$

Having a dependence of $\sigma \sim \varepsilon$ under uniaxial tension, according to formulas (7), one can obtain a dependence of $\sigma_i \sim \varepsilon_i$. The maximum strain value is ε – the value known from experience on uniaxial

tension, substituting it into the right one from formulas (7), is determined by ε_i, and then by (6) the small parameter β is calculated.

The state of the environment is subject to Hooke's law [11]:

$$\sigma_x = \lambda\theta + 2\mu\varepsilon_x;\ \sigma_{xy} = 2\mu\varepsilon_{xy};$$
$$\sigma_y = \lambda\theta + 2\mu\varepsilon_y;\ \sigma_{yz} = 2\mu\varepsilon_{yz};$$
$$\sigma_z = \lambda\theta + 2\mu\varepsilon_z;\ \sigma_{xz} = 2\mu\varepsilon_{xz},$$

where λ и μ – Lame parameters; θ – volumetric deformation, $\theta = \varepsilon_x + \varepsilon_y + \varepsilon_z$.

If in Hooke's law instead of Young's module we use the secant module (4), then it will have the form:

$$\sigma_{xx} = \lambda\theta + 2\mu\varepsilon_{xx} + 2/3\mu\theta\beta - 2\mu\varepsilon_{xx}\beta;$$
$$\sigma_{yy} = \lambda\theta + 2\mu\varepsilon_{yy} + 2/3\mu\theta\beta - 2\mu\varepsilon_{yy}\beta;$$
$$\sigma_{zz} = \lambda\theta + 2\mu\varepsilon_{zz} + 2/3\mu\theta\beta - 2\mu\varepsilon_{zz}\beta;$$
$$\tau_{xy} = 2\mu\varepsilon_{xy} - 2\mu\varepsilon_{xy}\beta; \qquad (8)$$
$$\tau_{yz} = 2\mu\varepsilon_{yz} - 2\mu\varepsilon_{yz}\beta;$$
$$\tau_{xz} = 2\mu\varepsilon_{xz} - 2\mu\varepsilon_{xz}\beta,$$

where

$$\mu = \frac{E_0}{2(1+\nu)};\ \lambda = \frac{E_0\nu}{(1+\nu)(1-2\nu)}.$$

This purpose allows us to describe the actual behavior of a physically nonlinear medium through the constants of a certain elastic medium and a small parameter β, the zero value of which corresponds to a linear isotropic medium.

We introduce the asymptotic series:

$$u_i = \sum_{n=0}^{\infty}\beta^n u_i^{(n)};\ \varepsilon_{ij} = \sum_{n=0}^{\infty}\beta^n\varepsilon_{ij}^{(n)};$$
$$\theta = \sum_{n=0}^{\infty}\beta^n\theta^{(n)};\ \sigma_{ij} = \sum_{n=0}^{\infty}\beta^n\sigma_{ij}^{(n)}. \qquad (9)$$

Superscripts in parentheses, equal to the degrees of a small parameter, identify the number of the corresponding element in the asymptotic series.

Hooke's law (8) after replacing the summation and postulate variables with zero values for any formally non-existent decomposition element for which the index has a negative value ($n < 0$) leads to the corollary:

$$\sigma_{xx}^{(n)} = \lambda\theta^{(n)} + 2\mu\varepsilon_{xx}^{(n)} + \tilde{\sigma}_{xx}^{(n)};$$
$$\sigma_{yy}^{(n)} = \lambda\theta^{(n)} + 2\mu\varepsilon_{yy}^{(n)} + \tilde{\sigma}_{yy}^{(n)};$$
$$\sigma_{zz}^{(n)} = \lambda\theta^{(n)} + 2\mu\varepsilon_{zz}^{(n)} + \tilde{\sigma}_{zz}^{(n)};$$
$$\sigma_{xy}^{(n)} = 2\mu\varepsilon_{xy}^{(n)} + \tilde{\sigma}_{xy}^{(n)};$$
$$\sigma_{yz}^{(n)} = 2\mu\varepsilon_{yz}^{(n)} + \tilde{\sigma}_{yz}^{(n)};$$
$$\sigma_{xz}^{(n)} = 2\mu\varepsilon_{xz}^{(n)} + \tilde{\sigma}_{xz}^{(n)};$$
$$\tilde{\sigma}_{xx}^{(n)} = 2/3\mu\theta^{(n-1)} - 2\mu\varepsilon_{xx}^{(n-1)};$$
$$\tilde{\sigma}_{yy}^{(n)} = 2/3\mu\theta^{(n-1)} - 2\mu\varepsilon_{yy}^{(n-1)};$$
$$\tilde{\sigma}_{zz}^{(n)} = 2/3\mu\theta^{(n-1)} - 2\mu\varepsilon_{zz}^{(n-1)};$$
$$\tilde{\sigma}_{xy}^{(n)} = -2\mu\varepsilon_{xy}^{(n-1)};$$
$$\tilde{\sigma}_{yz}^{(n)} = -2\mu\varepsilon_{yz}^{(n-1)};$$
$$\tilde{\sigma}_{xz}^{(n)} = -2\mu\varepsilon_{xz}^{(n-1)}.$$

After redesignation (tensor-index form of record):

$$s_{ij}^{(n)} = \sigma_{ij}^{(n)} - \tilde{\sigma}_{ij}^{(n)}, \qquad (10)$$

we obtain for the decomposition elements the familiar form of the generalized Hooke law for an isotropic body:

$$s_{ij}^{(n)} = \lambda\theta^{(n)} + 2\mu\varepsilon_{ij}^{(n)}. \qquad (11)$$

Cauchy's ratio is converted to a similar form:

$$\varepsilon_{ij}^{(n)} = \frac{1}{2}\left(u_{i,j}^{(n)} + u_{j,i}^{(n)}\right). \qquad (12)$$

Denoting through X_i^0 volume forces and assuming the series to be known

$$X_i^0 = \sum_{n=0}^{\infty}\beta^n X_i^{0(n)},$$

we rewrite the equilibrium equations in the form

$$s_{ij,j}^{(n)} + X_i^{(n)} = 0;\ X_i^{(n)} = X_i^{0(n)} + \tilde{\sigma}_{ij,j}^{(n)}. \qquad (13)$$

Relations (11) - (13) in shape correspond to the deformed state of an isotropic linearly elastic body.

Solution method

Any internal state of a linear isotropic elastostatic medium constitutes a set of displacements, strains, stresses $\xi = \{u_i, \varepsilon_{ij}, \sigma_{ij}\} \in \Xi$ coordinated by the defining relations. Their trace at the boundary ∂V of region V with a single external normal contains information about displacements and forces along the boundary $\gamma = \{u_i, p_i\} \in \Gamma$, $p_i = \sigma_{ij}n_j$ and corresponds to the boundary state. The spaces of possible internal and boundary states are Hilbert and isomorphic [2]: $\Xi \leftrightarrow \tilde{A}$.

Any correct problem reduces to an infinite system of linear algebraic equations

$$Q\mathbf{c} = \mathbf{q}, \qquad (14)$$

with respect to the vector of Fourier coefficients $\mathbf{c}$ of the expansion of the desired state in a series along an orthonormal basis

$$\xi = \sum_l c_l \xi^{(l)} . \qquad (15)$$

The Q matrix is structurally determined only by the type of boundary conditions (BC) and numerically through an orthonormal basis. In the first and second main tasks, matrix Q is the identity matrix. The vector of the right parts includes information about the specific content of the BC.

At each step, an infinite system of equations (14) is formulated in accordance with the BC of this iteration. In practice, it is quite realistic to consider BC only at $n=0$, solving only the main problem with $Q \equiv E$ in subsequent iterations and taking into account the corrections on the right-hand side caused by the appearance of fictitious volume forces in the ratios, which in the general case are not potential, but have a polynomial character. The general method of finding the internal state for a class of such forces is known [12].

Before performing iterations, the following actions are performed: on the basis of the general Papkovich-Neiber solution and the basis of harmonic functions in $V \cup \partial V$, the bases of spaces Ξ and Γ are formed [2]; isomorphic orthonormal bases are constructed; members of $X_i^{0(n)}$ decomposition series for X_i^0 are established. Due to the independence of the initial basis from parameter β, the orthonormal basis is constructed exactly once and then used in each iteration.

At step $n=0$: state $\tilde{\xi}^{(0)}$ is sought due to volume forces $X_i^{0(n)}$; in real BC, a correction is made corresponding to this state, an infinite system of equations $Q\mathbf{c}^{(0)} = \mathbf{q}$ is formed; its solution and linear combination (15) give an internal state of $\xi^{(0)}$; its sum with the state of the bulk forces prepares the initial approximation for ξ: $\xi = \xi^{(0)} + \tilde{\xi}^{(0)}$. According to the previous (10) formulas, the tensor $\tilde{\sigma}_{ij}^{(0)}$ is established.

At $n>0$: the tensor $s_{ij}^{(n)} = \sigma_{ij}^{(n)} - \tilde{\sigma}_{ij}^{(n)}$ and the vector $X_i^{(n)}$ are constructed; state $\tilde{\xi}^{(n)}$ is sought due to volume forces $X_i^{(n)}$ in accordance with (13); in BC, the correction value from them is introduced and the first main problem for the system of equations (11) – (13) is solved; summing with the state of fictitious volume forces and adjusting the stress field in accordance with (10) $\sigma_{ij}^{(n)} = s_{ij}^{(n)} + \tilde{\sigma}_{ij}^{(n)}$, this additive can be included in the accumulated resulting state with a coefficient of β^n.

After performing a sufficient number of approximations, it is necessary to carry out the final substitution of the value β and go to dimensional values.

The solution of the problem

Testing of the proposed methodology was carried out on a rather simple first basic task for a cube-shaped body. After carrying out the dimensionlessness, an analogy of which is shown in [13], the body occupies the region $V = \{(x,y,z) \mid -1 \le x,y,z \le 1\}$ and the technical constants of the hypothetical isotropic material (4) – (6): $E_0 = 3$; $\mu = 0.5$; $A = 3$; $B = 2$; $k = 2$; $\varepsilon_i = 0.1$. Small parameter (6) $\beta = 1/15$.

Loaded along faces S_1 and S_2 by forces (Figure 2):

$$\{p_x, p_y, p_z\} = \begin{cases} \{1,0,0\}, (x,y,z) \in S_1 \\ \{-1,0,0\}, (x,y,z) \in S_2 \end{cases} .$$

No mass forces: $X_i^0 = 0$.

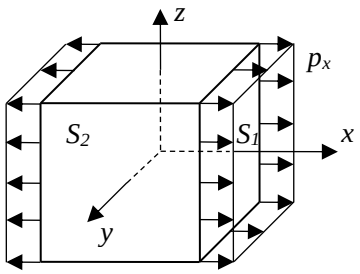

Figure 2 - Boundary conditions for the test problem

The application of the boundary-state method with perturbations allows us to consider an isotropic medium with dimensionless Young's modulus in tension $E_0 = 3$ and a Poisson's ratio of $\nu = 0.5$ at each iteration step.

Solution (9) is the series:

$$u = \sum_{n=0}^{N} \tfrac{1}{3} x\beta^n \; ; \; v = -\sum_{n=0}^{N} \tfrac{1}{6} y\beta^n \; ;$$

$$w = -\sum_{n=0}^{N} \frac{1}{6} z\beta^n ; \qquad (16)$$

$$\sigma_x = 1;\ \sigma_y = \sigma_z = \sigma_{yz} = \sigma_{xz} = \sigma_{xy} = 0.$$

After substituting the small strain parameter (calculated by the Cauchy relations [8]) for n = 3, they are equal:

$$\varepsilon_x = 0.35713;\ \varepsilon_y = \varepsilon_z = -0.17856;$$

$$\varepsilon_{yz} = \varepsilon_{xz} = \varepsilon_{xy} = 0.$$

The error will be estimated by comparing the strains of the resulting state with the strains of the elastic state, where the secant modulus (4) $E_0 = E_c = 2.8$ is used as the elastic modulus. For the last state:

$$\varepsilon_x = 0.357143;\ \varepsilon_y = \varepsilon_z = -0.17857;$$

$$\varepsilon_{yz} = \varepsilon_{xz} = \varepsilon_{xy} = 0.$$

For deformations, the errors were: ε_x – 0.36%; ε_y and ε_z – 0.56%. Those. three iterations to achieve satisfactory accuracy are sufficient.

We study the convergence of the obtained series with a significant increase in the small parameter. Now let $A = 3$; $B = 8$; $k = 2$; $\varepsilon_0 = 0.2$ and $\beta = 0.53333$. Now the comparison must be carried out with the state at $E_0 = E_c = 1.4$. For this state of deformation:

$$\varepsilon_x = 0.714286;\ \varepsilon_y = \varepsilon_z = -0.357143;$$

$$\varepsilon_{yz} = \varepsilon_{xz} = \varepsilon_{xy} = 0.$$

After substituting a small parameter in series (16), deformations:

at n = 3: $\varepsilon_x = 0.65649;\ \varepsilon_y = \varepsilon_z = -0.32824;$

$$\varepsilon_{yz} = \varepsilon_{xz} = \varepsilon_{xy} = 0;$$

at n = 16: $\varepsilon_x = 0.71427;$

$$\varepsilon_y = \varepsilon_z = -0.357135;\ \varepsilon_{yz} = \varepsilon_{xz} = \varepsilon_{xy} = 0.$$

For the latter case, the errors were: ε_x – 0.22%; ε_y and ε_z – 0.22%. Accuracy is ensured by increasing the number of iterations.

The material considered earlier was incompressible ($\nu_0 = 0.5$). When using material with a non-0.5 Poisson's ratio, the accuracy of the calculations decreases. For example, for $E_0 = 3$; $\beta = 0.066666$; n = 3, the accuracy of the calculation of deformations depending on the Poisson's ratio is presented in table 1.

Table 1

Decision error analysis

	$\nu_0 = 0.4$	$\nu_0 = 0.3$	$\nu_0 = 0.2$	$\nu_0 = 0.1$	$\nu_0 = 0.05$
ε_x	0.44%	0.89%	1.33%	1.78%	2%
ε_y, ε_z	1.1%	2.96%	6.66%	17.77%	39.98%

It should be noted that the error is laid already at the first iteration and an increase in the number n does not lead to its decrease.

Conclusion

An analysis of the foregoing allows us to conclude that the MGSW has proven to be an effective means of writing out an explicit solution in physically nonlinear problems of mechanics for bodies made of materials in which the tensile-compression diagram is described by a quadratic curve. The accuracy depends on the value of the Poisson's ratio, since Hooke's law (8) describes the dependence of strains on stresses in the theory of plasticity, in which, as you know, a Poisson's ratio of 0.5 is taken.

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SOLUTION OF PHYSICALLY NONLINEAR PROBLEMS OF THE ELASTICITY THEORY FOR BODIES FROM REINFORCED COMPOSITES

Abstract: *The paper describes a method for constructing a solution to the problem of physically nonlinear deformation of transversely isotropic composite bodies, in which the stiffness of the reinforcing elements is much higher than the stiffness of the binder. A simplified model of plastic deformation is used. The technique is a synthesis of the Poincaré perturbation method and the energy method of boundary states. The problems for the cube and cylinder are solved, the accuracy analysis is carried out and conclusions are formulated.*

Key words: *Boundary state method, perturbation method, transverse isotropy, composite materials, physical nonlinearity.*

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Introduction

Physically nonlinear problems are devoted to a lot of research. In [1], the basic principles of the theory of plasticity of anisotropic materials are presented. Rather new models of continuous media are stated. In [2], the process of elastoplastic deformation of transversely isotropic composites with cavities is studied. In [3], physical nonlinearity was considered together with material inhomogeneity. Homogeneous and inhomogeneous problems are solved in an axisymmetric formulation for a thick-walled cylinder. The geometrically and physically nonlinear problem of bending a three-layer plate with a soft anisotropic filler was considered in [4]. In [5], a solution to the problem of contact of plates with a physically nonlinear medium is presented. In [6], the resolving equations of the planar deformation theory of plasticity were constructed, which are described by mathematical models in which the physical relations are in the form of arbitrary cross-dependencies between invariants of stress and strain tensors.

The method of boundary states in the field of solving anisotropic problems has proved its effectiveness. For example, in [7] the plane problems of the theory of elasticity were solved for rectangular bodies with circular cutouts, and in [8], the Saint-Venant problem for an extended anisotropic cylinder was studied.

A number of works are devoted to solving boundary value problems of the theory of elasticity with the participation of mass forces [9-12].

This paper presents a methodology for solving physically nonlinear problems of the theory of elasticity for transversely isotropic composite bodies, in which the rigidity in one direction (z axis) is much higher than the rigidity in the other direction, as a result of which a simplified theory of plasticity can be applied.

Statement of the problem and the mathematical model of its solution

A physically nonlinear medium from a homogeneous continuous isotropic material is investigated. In the physically nonlinear theory, as well as in the theory of plasticity, the following concepts are used [13]:

stress intensity

$$\sigma_i = \frac{1}{\sqrt{2}}\sqrt{(\sigma_x-\sigma_y)^2+(\sigma_y-\sigma_z)^2+(\sigma_z-\sigma_x)^2+6(\tau_{xy}^2+\tau_{yz}^2+\tau_{zx}^2)}\,;$$

strain rate

$$\varepsilon_i = \frac{\sqrt{2}}{3}\sqrt{(\varepsilon_x-\varepsilon_y)^2+(\varepsilon_y-\varepsilon_z)^2+(\varepsilon_z-\varepsilon_x)^2+\tfrac{3}{2}(\gamma_{xy}^2+\gamma_{yz}^2+\gamma_{zx}^2)}\,.$$

The same quantities expressed in terms of principal stresses:

$$\sigma_i = \frac{1}{\sqrt{2}}\sqrt{(\sigma_1-\sigma_2)^2+(\sigma_2-\sigma_3)^2+(\sigma_3-\sigma_1)^2}\,; \quad (1)$$

$$\varepsilon_i = \frac{\sqrt{2}}{3}\sqrt{(\varepsilon_1-\varepsilon_2)^2+(\varepsilon_2-\varepsilon_3)^2+(\varepsilon_3-\varepsilon_1)^2}\,. \quad (2)$$

The intensity of tangential stresses (according to Huber-Mises [14]) is

$$\tau_i = \frac{\sigma_i}{\sqrt{3}}\,; \quad (3)$$

Shear strain rate

$$\gamma_i = \sqrt{3}\varepsilon_i\,. \quad (4)$$

Consider the process of deformation in the xy isotropy plane of a transversally isotropic body (the z axis is perpendicular to the isotropy planes).

The dependence of the intensity of shear stresses on the intensity of shear deformations is shown in Figure 1. Curve 2 corresponds to a linear dependence, 2 to a nonlinear one.

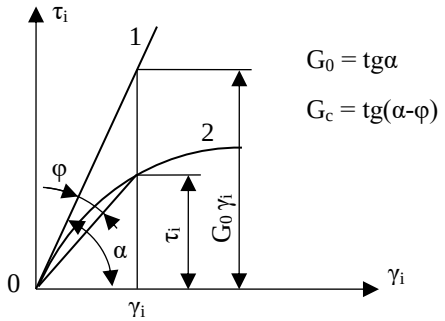

Figure 1 - Dependence between stress and strain intensities

In figure 1 G is the shear modulus for the plane of isotropy, G_c is the secant shear modulus for the same plane, and

$$G_c = \frac{\tau_i}{\gamma_i}\,. \quad (5)$$

We introduce a small parameter β characterizing the deviation of the secant shear modulus from the shear modulus:

$$G_c = G(1-\beta)\,. \quad (6)$$

Let the material have a nonlinear net shear diagram described by the relation

$$\tau_i = A\gamma_i - B\gamma_i^k\,, \quad (7)$$

where A, B, k – are material constants determined from the experiment on shear in the plane of isotropy. From (6) it follows

$$\beta = 1-\frac{G_c}{G}\,. \quad (8)$$

Substituting equalities (5), (8) into dependence (7), we obtain

$$\beta = 1-\frac{A}{G}-\frac{B}{G}\gamma_i^{k-1}\,. \quad (9)$$

The relationship between the intensity of shear stresses and the intensity of shear deformations does not depend on the type of stress state. From this it follows that the dependence $\tau_i = f(\gamma_i)$ is the same for any combination of stresses and strains and can be determined from any experiment, for example, by a pure shift. Having stresses and strains from the simplest experiment, using formulas (1), (2), (3), (4), we can obtain the dependence $\tau_i \sim \gamma_i$ and calculate the small parameter by the formula (9).

In a similar way, we can introduce a small parameter α for planes perpendicular to the isotropy planes:

$$G_z^c = G_z(1-\alpha)\,;\ \alpha = 1-\frac{C}{G_z}-\frac{D}{G_z}\gamma_i^{h-1}\,, \quad (10)$$

where C, B, h – are material constants determined from the experiment on shear in a plane perpendicular

to the isotropy plane, G_z^c, G_z – is the secant shear modulus and shear modulus in the same plane.

The state of the medium in the simplified theory of plasticity is subject to the generalized Hooke law [15]:

$$\sigma_{xx} = (\lambda_2 + \lambda_4)\theta + \lambda_3\varepsilon_x + 2\lambda_4(1-\pi(p))\frac{\varepsilon_{xx} - \varepsilon_{yy}}{2};$$

$$\sigma_{yy} = (\lambda_2 + \lambda_4)\theta + \lambda_3\varepsilon_x + 2\lambda_4(1-\pi(p))\frac{\varepsilon_{yy} - \varepsilon_{xx}}{2};$$

$$\sigma_{zz} = \lambda_3\theta + \lambda_1\varepsilon_x;\ \theta = \varepsilon_{xx} + \varepsilon_{yy}; \quad (11)$$

$$\sigma_{xy} = 2\lambda_4(1-\pi(p))\varepsilon_{xy};$$

$$\sigma_{xz} = 2\lambda_5(1-\chi(q))\varepsilon_{xz};$$

$$\sigma_{yz} = 2\lambda_5(1-\chi(q))\varepsilon_{yz},$$

where $\pi(p)$ and $\chi(q)$ are plasticity functions of type A.A. Ilyushin, equal to zero in the elastic zone; λ_i – parameters of a transversely isotropic medium associated with technical constants by the following expressions:

$$\lambda_1 = E_z(1-\nu)/l;\ \lambda_2 = E(\nu + k\nu_z^2)/l[(1+\nu)l];$$

$$\lambda_3 = E\nu_z/l;\ \lambda_4 = G = E/[2(1+\nu)];$$

$$\lambda_5 = G_z;\ l = 1-\nu-2\nu_z^2 k;\ k = E/E_z;$$

here E_z and E are the elastic modules, respectively, in the direction of the z axis and in the isotropy plane, ν_z is the Poisson's ratio characterizing compression along r during tension along the z axis, ν is the Poisson's ratio characterizing lateral compression in isotropic planes under tension in the same planes, G and G_z – shear modulus in isotropy planes and perpendicular to them.

If, in Hooke's law (11), instead of shear modules, secant modules (6), (10) are used, and discrete values $\pi(p)$, $\chi(q)$ are assigned to functions β, α, respectively, then it will have:

$$\sigma_{xx} = [\lambda_2 + 2\lambda_4(1-\beta)]\varepsilon_{xx} + \lambda_2\varepsilon_{yy} + \lambda_3\varepsilon_{zz};$$

$$\sigma_{yy} = [\lambda_2 + 2\lambda_4(1-\beta)]\varepsilon_{yy} + \lambda_2\varepsilon_{xx} + \lambda_3\varepsilon_{zz};$$

$$\sigma_{zz} = \lambda_3\theta + \lambda_1\varepsilon_{zz}; \quad (12)$$

$$\sigma_{xy} = 2\lambda_4(1-\beta)\varepsilon_{xy};$$

$$\sigma_{xz} = 2\lambda_5(1-\alpha)\varepsilon_{xz};$$

$$\sigma_{yz} = 2\lambda_5(1-\alpha)\varepsilon_{yz}.$$

This purpose allows us to describe the actual behavior of a physically nonlinear transversely isotropic medium through the constants of a certain elastic medium and small parameters β and α, the zero values of which correspond to a linear medium.

Next, asymptotic series are introduced:

$$u_i = \sum_{n=0}^{\infty}\beta^n u_i^{(n)};\ \varepsilon_{ij} = \sum_{n=0}^{\infty}\beta^n\varepsilon_{ij}^{(n)};\ \theta = \sum_{n=0}^{\infty}\beta^n\theta^{(n)};$$

$$\sigma_{ij} = \sum_{n=0}^{\infty}\beta^n\sigma_{ij}^{(n)}.$$

Hooke's law (12) after replacing the summation and postulate variables with zero values for any formally non-existent decomposition element for which the index has a negative value ($n < 0$) leads to the corollary:

$$\sigma_{xx}^{(n)} = \lambda_2\theta^{(n)} + 2\lambda_4\varepsilon_{xx}^{(n)} + \lambda_3\varepsilon_{zz}^{(n)} + \tilde{\sigma}_{xx}^{(n)};$$

$$\sigma_{yy}^{(n)} = \lambda_2\theta^{(n)} + 2\lambda_4\varepsilon_{yy}^{(n)} + \lambda_3\varepsilon_{zz}^{(n)} + \tilde{\sigma}_{yy}^{(n)};$$

$$\sigma_{zz}^{(n)} = \lambda_3\theta^{(n)} + \lambda_1\varepsilon_{zz}^{(n)} + \tilde{\sigma}_{zz}^{(n)};$$

$$\sigma_{xy}^{(n)} = 2\lambda_4\varepsilon_{xy}^{(n)} + \tilde{\sigma}_{xy}^{(n)};$$

$$\sigma_{yz}^{(n)} = 2\lambda_5\varepsilon_{yz}^{(n)} + \tilde{\sigma}_{yz}^{(n)};$$

$$\sigma_{xz}^{(n)} = 2\lambda_5\varepsilon_{xz}^{(n)} + \tilde{\sigma}_{xz}^{(n)};$$

$$\tilde{\sigma}_{xx}^{(n)} = 2\lambda_4\varepsilon_{xx}^{(n-1)};$$

$$\tilde{\sigma}_{yy}^{(n)} = 2\lambda_4\varepsilon_{yy}^{(n-1)};$$

$$\tilde{\sigma}_{zz}^{(n)} = 0;$$

$$\tilde{\sigma}_{xy}^{(n)} = -2\lambda_4\varepsilon_{xy}^{(n-1)};$$

$$\tilde{\sigma}_{yz}^{(n)} = -2\lambda_5\varepsilon_{yz}^{(n-1)};$$

$$\tilde{\sigma}_{xz}^{(n)} = -2\lambda_5\varepsilon_{xz}^{(n-1)}.$$

Then you can write:

$$s_{ij}^{(n)} = \sigma_{ij}^{(n)} - \tilde{\sigma}_{ij}^{(n)}. \quad (13)$$

and get for the decomposition elements the familiar form of the generalized Hooke law for a transversely isotropic body:

$$s_{xx}^{(n)} = \lambda_2\theta^{(n)} + 2\lambda_4\varepsilon_{xx}^{(n)} + \lambda_3\varepsilon_{zz}^{(n)};$$

$$s_{yy}^{(n)} = \lambda_2\theta^{(n)} + 2\lambda_4\varepsilon_{yy}^{(n)} + \lambda_3\varepsilon_{zz}^{(n)};$$

$$s_{zz}^{(n)} = \lambda_3\theta^{(n)} + \lambda_1\varepsilon_{zz}^{(n)};$$

$$s_{xy}^{(n)} = 2\lambda_4\varepsilon_{xy}^{(n)}; \quad (14)$$

$$s_{yz}^{(n)} = 2\lambda_5\varepsilon_{yz}^{(n)};$$

$$s_{xz}^{(n)} = 2\lambda_5\varepsilon_{xz}^{(n)}.$$

Cauchy's ratio:

$$\varepsilon_{ij}^{(n)} = \frac{1}{2}\left(u_{i,j}^{(n)} + u_{j,i}^{(n)}\right). \quad (15)$$

Denoting through X_i^0 volume forces and assuming the series to be known

$$X_i^0 = \sum_{n=0}^{\infty}\beta^n X_i^{0(n)},$$

we rewrite the equilibrium equations in the form

$$s_{ij,j}^{(n)} + X_i^{(n)} = 0;\ X_i^{(n)} = X_i^{0(n)} + \tilde{\sigma}_{ij,j}^{(n)}. \quad (16)$$

Relations (14) - (16) in shape correspond to the deformed state of a linear transversely isotropic elastic body.

The method of boundary states with perturbations

Any internal state of a linear isotropic elastostatic medium constitutes a set of displacements, strains, and stresses agreed upon by the governing relations $\xi = \{u_i, \varepsilon_{ij}, \sigma_{ij}\} \in \Xi$. Their trace at the

boundary ∂V of region V with a single external normal n_j contains information about displacements and forces along the boundary $\gamma = \{u_i, p_i\} \in \Gamma$, $p_i = \sigma_{ij} n_j$ and corresponds to the boundary state. The spaces of possible internal and boundary states are Hilbert and isomorphic [16]: $\Xi = \{\xi^{(1)}, \xi^{(2)}, ..., \xi^{(n)}\} \leftrightarrow \Gamma = \{\gamma^{(1)}, \gamma^{(2)}, ..., \gamma^{(n)}\}$.

$a_1\xi^{(1)} + a_2\xi^{(2)} \leftrightarrow a_1\gamma^{(1)} + a_2\gamma^{(2)}$, $(\xi^{(1)}, \xi^{(2)})_\Xi = (\gamma^{(1)}, \gamma^{(2)})_\Gamma$.

Any correct problem reduces to an infinite system of linear algebraic equations

$$Q\mathbf{c} = \mathbf{q}, \qquad (17)$$

with respect to the vector of Fourier coefficients $\mathbf{c}$ of the expansion of the desired state in a series along an orthonormal basis

$$\xi = \sum_l c_l \xi^{(l)}. \qquad (18)$$

Matrix Q is structurally determined only by the type of boundary conditions and numerically through an orthonormal basis. In the first and second main problems, matrix Q is the identity matrix. The vector of the right-hand sides includes information on the specific filling of the boundary conditions.

At each step, an infinite system of equations (17) is formulated in accordance with the boundary conditions of this iteration. In practice, it is enough to consider real boundary conditions only at $n = 0$, solving only the main problem with $Q \equiv E$ in subsequent iterations and taking into account the corrections on the right-hand side caused by the appearance of fictitious volume forces in the relations, which in the general case are not potential, but have a polynomial character.

Before performing iterations, the following actions are performed: on the basis of the general solution and the basis of harmonic functions in $V \cup \partial V$, the bases of spaces Ξ and Γ are formed; isomorphic orthonormal bases are constructed; the members of $X_i^{0(n)}$ expansion series for X_i^0 are established. Due to the independence of the initial basis from small parameters, the orthonormal basis is constructed exactly once and then used in each iteration.

At step $n = 0$: state $\tilde{\xi}^{(0)}$ is sought due to volume forces $X_i^{0(n)}$; a correction corresponding to this state is worn into real boundary conditions, an infinite system of algebraic equations is formed $Q\mathbf{c}^{(0)} = \mathbf{q}$; its solution and linear combination (18) give the internal state $\xi^{(0)}$; its sum with the state of the bulk forces prepares the initial approximation for ξ: $\xi = \xi^{(0)} + \tilde{\xi}^{(0)}$. According to the previous (13) formulas, the tensor $\tilde{\sigma}_{ij}^{(0)}$.

At $n > 0$: tensor $s_{ij}^{(n)} = \sigma_{ij}^{(n)} - \tilde{\sigma}_{ij}^{(n)}$ and vector $X_i^{(n)}$ are constructed; state $\tilde{\xi}^{(n)}$ is sought due to volume forces $X_i^{(n)}$ in accordance with (16); the correction value from them is introduced into the boundary conditions and the first main problem for the system of equations (14) - (16) is solved; summing with the state of fictitious volume forces and adjusting the stress field in accordance with (13) $\sigma_{ij}^{(n)} = s_{ij}^{(n)} + \tilde{\sigma}_{ij}^{(n)}$ allow this additive to be included in the accumulated resulting state with coefficients β^n, α^n.

After performing a sufficient number of approximations, it is necessary to carry out the final substitution of the values of small parameters and go to dimensional quantities.

The solution of the problem

The task for the body in the form of a cube (the Cartesian coordinate system is used). The body occupies the region $V = \{(x, y, z) \mid -1 \le x, y, z \le 1,\}$ and the technical constants of the material [17]: $E = 1.3992$; $E_z = 2.6682$; $\nu = 0.0682$; $\nu_z = 0.248$; $G = 0.6549$; $G_z = 0.5396$; $A = 0.5$; $B = 1.2$; $C = 0.4$; $D = 1.1$; $k = 2$; $\varepsilon_i = 0.1$. Small parameters:; $\beta = 0.053339$; $\alpha = 0.054855$.

The body is loaded along the faces with uniform unitary forces, causing comprehensive tension and shear. Volume forces are absent: $X_i^0 = 0$.

We show the expressions for strains and stresses for n = 3:

$$\varepsilon_{xx} = \varepsilon_{yy} = 0.573 + 0.49984\beta + 0.43601\beta^2 + 0.38033\beta^3;$$

$$\varepsilon_{zz} = 0.18889 - 0.13952\beta - 0.1217\beta^2 - 0.10616\beta^3; \qquad (19)$$

$$\varepsilon_{yz} = \varepsilon_{xz} = 0.92661\sum_{n=1}^{3}\alpha^n;$$

$$\varepsilon_{xy} = 0.763436\sum_{n=1}^{3}\beta^n;$$

$$\sigma_{xx} = \sigma_{yy} = \sigma_{zz} = \sigma_{yz} = \sigma_{xz} = \sigma_{xy} = 1.$$

After substituting small deformation parameters:

$$\varepsilon_x = \varepsilon_y = 0.600964;\ \varepsilon_z = 0.181087;$$

$$\varepsilon_{yz} = \varepsilon_{xz} = 0.980383;\ \varepsilon_{xy} = 0.806445.$$

The error will be estimated by comparing the strains of the obtained state with the strains of the elastic state of the material, the technical constants of which:

$$E_r = \frac{4\lambda_4(\beta-1)(\lambda_3^2 - \lambda_1(\lambda_2 + \lambda_4 - \beta\lambda_4))}{\lambda_3^2 - \lambda_1\lambda_2 + 2(\beta-1)\lambda_1\lambda_4} = 1.32899;$$

$$E_z = \lambda_1 - \frac{\lambda_3^2}{\lambda_2 + \lambda_4(1-\beta)} = 2.65922;$$

$$\nu_r = \frac{\lambda_3^2 - \lambda_1\lambda_2}{\lambda_3^2 - \lambda_1(\lambda_2 - 2\lambda_4(\beta - 1))} = 0.07176;$$

$$\nu_z = \frac{\lambda_3}{2(\lambda_2 + \lambda_4(1-\beta))} = 0.25922; \qquad (20)$$

$$G_z = \lambda_5(1-\alpha) = 0.51;\ G_r = \frac{E_r}{2(1+\nu_{r\theta})} = 0.62.$$

For the last state:

$$\varepsilon_x = \varepsilon_y = 0.600967;\ \varepsilon_z = 0.181086;$$

$$\varepsilon_{yz} = \varepsilon_{xz} = 0.980392;\ \varepsilon_{xy} = 0.806452.$$

For deformations, the errors were: ε_{xx} and ε_{yy} – 0.00047 %; ε_z – 0.00043%, ε_{yz} and ε_{xz} – 0.0009 %; ε_{xy} – 0.00081%.

We study the convergence of the obtained series with a significant increase in small parameters. Let now $A = C = 0.3$; $B = 0.2$; $D = 0.1$; $k = 2$; $\varepsilon_0 = 0.1$, $\beta = 0.511401$ and $\alpha = 0.4255$. Here, a comparison must be made with the state for a material for which $E = 0.723381$, $E_z = 2.52729$, $\nu = 0.13028$; $\nu_z = 0.424089$; $G_z = 0.31$; $G = 0.32$. For this strain state:

$$\varepsilon_{xx} = \varepsilon_{yy} = 1.03449;\ \varepsilon_z = 0.60072;$$

$$\varepsilon_{yz} = \varepsilon_{xz} = 1.6129;\ \varepsilon_{xy} = 1.5625.$$

After substituting small parameters in series (19), the strains amounted to:

when n = 3: $\varepsilon_{xx} = \varepsilon_{yy} = 0.99352$; $\varepsilon_z = 0.060072$; $\varepsilon_{yz} = \varepsilon_{xz} = 1.56$; $\varepsilon_{xy} = 1.45563$;

when n = 14: $\varepsilon_{xx} = \varepsilon_{yy} = 1.03449$; $\varepsilon_z = 0.060074$; $\varepsilon_{yz} = \varepsilon_{xz} = 1.6129$; $\varepsilon_{xy} = 1.56243$.

Thus, the accuracy of calculations is ensured by increasing the number of iterations.

We now consider the asymmetric problem for a cylinder (a cylindrical coordinate system is used). The body occupies the area $V = \{(r,z)|\ 0 \le r \le 1, -2 \le z \le 2\}$ and material technical constants: $E = E_r = 1.3992$; $E_z = 2.6682$; $\nu = \nu_r = 0.0682$; $\nu_z = 0.248$; $G = G_r = 0.6549$; $G_z = 0.5396$; $A = 0.5$; $B = 0.2$; $C = 0.4$; $D = 0.1$; $k = 2$; $\varepsilon_i = 0.1$. Small parameters: $\beta = 0.206026$; $\alpha = 0.240178$.

The body is loaded along the faces S_1 and S_2 with the efforts of:

$$\{p_r, p_z\} = \begin{cases} \{1,0\},| & r = 1, -2 \le z \le 2; \\ \{0,-1\},| & z = -2, 0 \le r \le 1; \\ \{0,1\},| & z = 2, 0 \le r \le 1. \end{cases}$$

$$X_i^0 = 0.$$

Solution (13) in the third approximation (n = 3) is the series:

$$u = 0.573r + 0.49984r\beta + 0.43601r\beta^2 + 0.38033r\beta^3;$$

$$w = 0.18889z - 0.13952z\beta - 0.1217z\beta^2 - 0.10616z\beta^3;$$

$$\sigma_r = \sigma_\theta = \sigma_z = 1;\ \sigma_{rz} = \sigma_{r\theta} = \sigma_{z\theta} = 0.$$

After substituting the small parameter, the strains are equal:

$$\varepsilon_r = \varepsilon_\theta = 0.697819;\ \varepsilon_z = 0.154051;$$

$$\varepsilon_{rz} = \varepsilon_{r\theta} = \varepsilon_{z\theta} = 0.$$

We estimate the error in a similar way, only now we need a comparison with a state whose technical constants are (20): $E_r = 1.12778$; $E_z = 2.62834$; $\nu_r = 0.084403$; $\nu_z = 0.297818$; $G_z = 0.42$; $G_r = 0.52$.

For the last state:

$$\varepsilon_r = \varepsilon_\theta = 0.698547;\ \varepsilon_z = 0.153848;$$

$$\varepsilon_{rz} = \varepsilon_{r\theta} = \varepsilon_{z\theta} = 0.$$

For deformations, the errors were: ε_r and ε_θ – 0.1 %; ε_z – 0.13%..

Conclusion

An analysis of the foregoing allows us to conclude that the method of boundary states with perturbations has proven to be an effective means of writing out an explicit solution to physically nonlinear problems of mechanics for and transversely isotropic media. To solve a particular physically nonlinear problem, it is necessary to have an appropriate solution to the linearly elastic problem. However, the accuracy of the approximate solution in the case of nontrivial boundary value problems strongly depends on the magnitude of small parameters deflecting the nonlinear medium from the linear medium.

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OPTICAL ANISOTROPIC PROPERTIES OF NANOFIBER POLYMER MATERIALS

Abstract: *The thermal decomposition of nanofiber nonwoven polymeric materials is studied in the article by the method of differential thermal analysis (DTA). At the same time, it was shown at various temperatures that the fibers of anisotropic and isotropic films obtained from fibroin silk, respectively, lose weight with uneven intensity. And also studied the properties of optical anisotropy in various temperature aqueous media of cotton cellulose.*

Key words: *fibroin, cellulose, electrospinning, nanofiber, nanomaterial, formation, polymer, silk, structure, temperature.*

Language: *Russian*

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ОПТИЧЕСКО-АНИЗОТРОПИЧЕСКИЕ СВОЙСТВА НАНОВОЛОКОННЫХ ПОЛИМЕРНЫХ МАТЕРИАЛОВ

Аннотация: *В статье методом дифференциального термического анализа (ДТА) изучена терморазложения нановолоконных нетканных полимерных материалов. При этом при различных температурах показано, что волокна, анизатропных и изотропных пленок полученных из фиброиновых шелка соответственно теряет массу с неравномерной интенсивностью. А также изучены свойства оптического-анизотропия в различных температурных водных среды хлопковой целюлозы.*

Ключевые слова: *фиброин, целлюлоза, электроспиннинг, нановолокно, наноматериал, формирование, полимер, шелка, структура, температура.*

Введение

За последние несколько лет с большим потенциалом нанотехнология вошло в мировое сознание и стала переспективной направлением в науке.

Нанотехнология сейчас находится в начальной стадии развития, поскольку основные открытия, предсказываемые в этой области, пока не сделаны. Но тем не менее, проводимые исследования уже дают практические результаты. Использование в нанотехнологии передовых научных результатов позволяет относить её к высоким технологиям[1].

Нанотехнология как междисциплинарное направление в науке и технике сформировалось в течение последних 20–25 лет и изучает объекты,

размеры которых составляют примерно 1,0-100 нм, или так называемые малоразмерные объекты. Важной и неотъемлемой задачей этого направления является разработка наноструктурных материалов: нанокристаллических, нанокомпозитных, нанофазных, нановолок-нистых и другие. Основные структурные элементы наноматериалов (кристаллиты, волокна, слои, поры) не превышают 100 нм. В задачу материаловедческих исследований входит установление многообразных связей между свойствами и структурой материалов с выявлением оптимальных наноструктур, что осуществляется в тесной связи с технологией изготовления и последующей эксплуатацией наноструктурных материалов [2].

Ориентационно-упорядоченное структуро-образование полимеров является физическим превращением макромолекул, позволяющее получать анизотропные материалы (волокна, пленки, сорбенты.) со специфическими функциональными свойствами. Такие материалы кроме анизотропии механических, оптических, термических свойств могут характеризоваться анизотропией влагопоглощения, набухаемости, десорбции, разложения, растворения, благодаря гидрофильности и гидрофобности полимеров и их надмолекулярной структурной организации [3].

Несомненно, полимерные сырья на основе наноразмерных полимерных материалов нашли широкое применение в современном и будущем технологии, электронике, биомедицине, авиации, автопромышленности, искусственных спутниках, спортных товарах и в многих других отраслях.Большое значение для наноматериаловявляется изучения их необыкновенных свойств, изменение морфологических и анизотропных свойств в результате механического, термического, оптического воздействия [4].

Основные характеристики объектов исследований.

Фиброин шелка. Фиброин шелка (ФШ) является природным полимером, основой волокон натурального шелка и могут выделен путем промывания от серицина, жировосков. Полученный фиброин будучи фибриллярным белком, представляет собой сложной третичной и четвертичной структурой в волокне.

Молекула фиброина имеет эмпирическую структуру $C_{13}H_{23}N_5O_6$ и элементарное звено его характеризуется средней молекулярной массой 345. Поскольку, элементарные звена фиброина состоит из остатков аминокислот, то в них имеются такие группы, как карбоксильные и амидные. Эти карбоксильные и амидные группы будучи активными, способствуют различным структурным организациям, в частности, образованию альфа и бета структуры, гелеобразованию и кристаллизации.

Хлопковая целлюлоза. Хлопковая целлюлоза (ХЦ), клетчатка (фр. Cellulose от лат. Cellula — «клетка») -органическое соединение, углевод, полисахарид с формулой $(C_6H_{10}O_5)_n$. Молекулы- неразветвлённые цепочки из остатков β-глюкозы, соединённых гликозидными связями β-(1→4). Белое твёрдое вещество, нерастворимое в воде. Главная составная часть клеточных оболочек всех высших растений.

1. Методы исследования

Для получения нановолокон из растворов и смесей выбранных полимеров использована установка электроспиннинга, которая была собрана на основе представленной принципиальной схеме и имеет вид (рис.1).

Электроспиннинг - универсальный метод получения непрерывных волокон с диаметром от нескольких нанометров до микрометров из растворов или расплавов полимеров [5].

Нановолокна, полученные методом электроспининга из расплава поли-мера, представляют большой интерес для проведения исследований. В них отсутствуют примеси высокотоксичных растворителей.

Методом электроспининга получено нетканые материалы из большого числа синтетических и натуральных полимеров [6].

Характеристики нановолоконных нетканых материалов и их нано пористость во многом зависит от условий электроспиннинга и укладки нановолокон на поверхности экрана - приемника.

В этом интерес представляет получение нановолоконных нанопористых нетканых материалов на основе местных биосовместимых полимеров, в частности, фиброина и целлюлозы, выделенных, соответственно, из отходов переработки кокона шелка и хлопкового сырья, например, лигнина. Нановолокна фиброина характеризуются с выраженной биоактивностью, которой наиболее ярко проявляется на поверхностном слои нанопористого нетканого материала.

Образец фиброина был выделен из состава волокон кокона натурального шелка путем промывания биоклея - серицина в воде при температуре 90 ºС в течение 4 часов, а также жировосков в этаноле и ацетоне на аппарате Сокслет. В качестве растворителя, способного разрушить кристаллические участки очищенных волокон без деструкций молекул ФШ использовано 50%-ный водный раствор $CaCl_2$ при температуре 90 ºС. Ионы Са и Cl из раствора ФШ было удалено путем диализа, с ипользованием полупроницаемой мембраны ксантатаната целлюлозы.

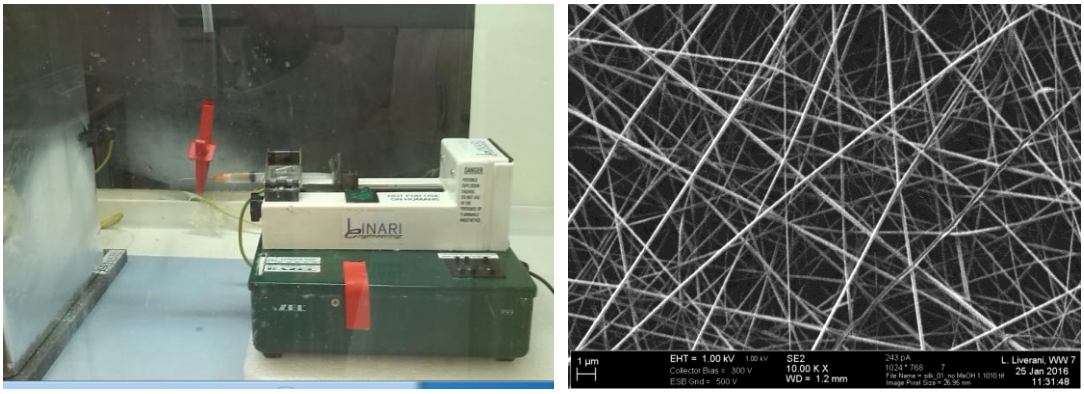


Рис.1. Установка электроспиннинга (а) и РЭМ снимок нановолокон ФШ (б): 1- шприц растворам полимера; 2- высокое напряжение; 3 - нановолокна.

При этом, очищенный ФШ осаждался с аморфным состоянием цепей. Прядильные растворы ФШ приготовлены в муравьиной кислоте (МК) и выявлено, что концентрация (С) данного биополимера около 12 - 18 % является оптимальным для формования нановолокон толщиной 50 – 200 нм. Для проведения сравнительных исследований выбран очищенные волокна хлопковой целлюлозы и прядильные растворы данного образца, приготовленные в трифторуксусной кислоте (ТФУК).

Под действием высокого напряжения 15 кВ была получена электроспиннинг нановолокон из прядильных растворов биополимеров. При этом, использована иглообразная фильера диаметром капилляра 0,05 см и расстояние от фильера до экрана составляло 10 см. Упорядоченные равномерные укладки нановолокон осуществлялось на поверхности экрана, вращающийся частотой 15 об/мин. Также, получена нановолоконные материалы при отсутствии вращения экрана. Сравнительные исследования проведена для образцов нановолоконных материалов с использованием методов двулучепреломления (ДЛП), сорбции паров воды и набухании при фильтрации жидкостей [7].

2. Результаты и обсуждение .

Терморазложение. Методом дифференциального термического анализа (ДТА) изучена окислительное терморазложение, т.е. потеря массы образцов с ростом температуры (рис.2). Была выявлена, что потеря массы для пленок фиброина начинается при 80 - 90ºС и интенсивно происходит для изотропной пленки в интервале 150 - 250 ºС. А для анизотропных пленок в интервале 180 - 500 ºС и выше. В последнем случае, графики характеризуют более выраженной неравномерной интенсивностью потерь массы. Безусловно, такая особенность и смешение графиков в область больших значений температуры обусловлена анизотропией образцов. При этом поляризационно-оптическое наблюдение показало, что терморазложение начинается после некоторой усадки и скручивания образцов, со снижением их анизотропии. Процесс сопровождается с выделением запаха, возможно, образованием углекислого газа.

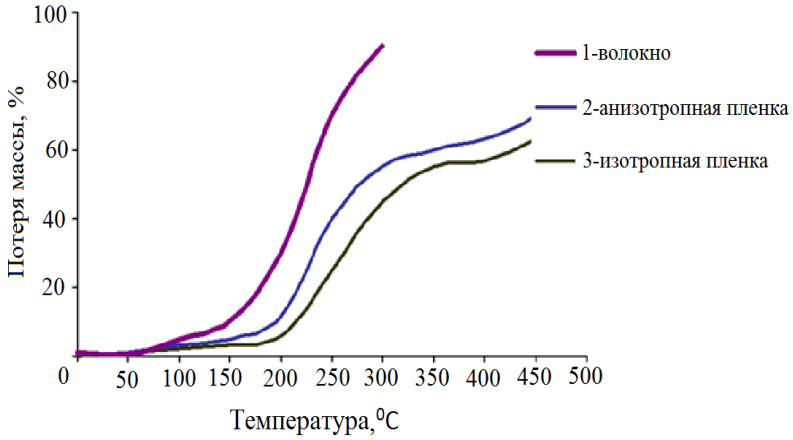
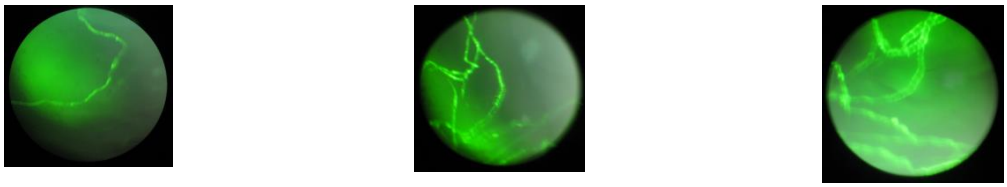


Рис 2. Терморазложения образцов фиброина шелка при ДТА



t_1= 20 °C *t_2= 80 °C* *t_3= 100 °C*

Рис. 3. Микрофотография оптического-анизотропия в различных температурной водной среди хлопковой целюлозы

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QR – Issue QR – Article

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SOCIO-ECONOMIC RELATIONS AND DYNAMIC FEATURES OF INNOVATIVE THOUGHT

Abstract: *This article argues that the dynamic features of social and economic relations are the result of developing new products, expanding services, meeting the needs of the population, and leveraging and utilizing human thinking, economic and innovative development.*

Key words: *Economic thinking, business entity, enterprise, entrepreneurship, service institutions, science and technology, socio-economic development, legal, person, society and state, scientific activities, scientific ideas, economic activities, small business, private entrepreneurship, credit, raw materials resources, export potential, financial mechanism, governmental and non-governmental organizations.*

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Introduction

In any labor process, the individual makes a conscious effort to perform a particular task, both physically and mentally. But this does not mean that mental and physical work are not compatible, but also that there is some difference. The division of labor into mental and physical forms has played an important role in the development of society.

With the emergence of mechanical tools of production, the great introduction of science and innovation into production, there was a need to mobilize agronomists, engineers, and technicians with specialized theoretical knowledge in material production. Mental labor, as a specialized form of labor, has begun to be embodied in the intellectual community (which is now considered by many researchers as a social group as part of the social structure of society, since intellectuals also sell intellectual property and sell it as a commodity). Dynamic features of social and economic relations encourage economic entities and entrepreneurs to develop new products, expand services and meet the needs of the population.

The level of knowledge, thinking, outlook, spirituality of the youth of each era can be clearly seen in tomorrow's society. After all, young people are the cornerstones of society, the most advanced groups of the population, the reliable owners of the future. The essence of the state scientific and technical policy, which is a priority in the transition to market relations, is to promote scientific and technological research that can meet the domestic demand of the republic, be competitive on the world market, and allow radical reconstruction of the economic sectors. The state innovation policy is based on the recognition of the priorities of innovative activities to improve the competitiveness of domestic products, sustainable economic growth, improving the quality and standard of living of the population, technological and environmental safety.

The main purpose of the state innovation policy is to create economic, legal and organizational conditions for ensuring the competitiveness of local products for innovative activities, effective use of scientific and technological achievements, and socio-economic development, as well as strengthening the country's defense capability, public and private security. Scientific activity has been and remains to be the most active area of public policy. It is worth noting that the scientific idea cannot be applied directly in

economic activity. That is why organizations are slow to invest in research, although they are in great need. Under the current circumstances, the government is committed to providing the business function, namely, scientific knowledge and ideas. This is the constant search for independent business entities and entrepreneurs in a market economy, the desire to effectively use production innovations.

All Theorists of Market Economics R.Contilon, A. Tyugro, F. Kene, A. Smith, J.B. Seya, F. Khan Hayek, L. Mizes, P.F. Drewer emphasizes the need for innovative thinking and research, without denying benefits. According to Drewer, “the introduction of innovation is a special tool, a tool for entrepreneurship, which is no less important than making a profit in the business and services sector. That is why it is an opportunity to continuously search for new sources of information, to achieve success in business and services. ” P.F. Drewer points out that this combination of thinking and activity is driven by innovative research that is aimed at changing and updating the "external and internal corporate environment." According to him, economic activity, when entrepreneurship is combined with innovation, on the one hand, directs profits only beyond wealth, to support scientific and technological discoveries, and, on the other, to create new thinking, business culture, business skills, business qualities. That's right, neither P.F. Drewer nor the above-mentioned economists study economic thinking as a separate socio-philosophical phenomenon, but their scientific-theoretical legacy is based on subjective factors that contribute to economic activity - economic consciousness, economic culture, entrepreneurial plan and purpose, the ideal of living. There are valuable insights into the realities.

Economic thinking, consciousness is a component of economic culture, which, by its peculiarities, represents social and economic relations of a person, gives a purpose and direction to economic activity. Economic thinking, primacy of consciousness or socio-economic existence, relationships rise controversy.

In our view, they do not have dialectically interrelated realities, no economic thinking, no social and economic existence, and the second one is not formed. Each period and society forms a kind of economic thinking and socio-economic relations that do not exist. According to Doctor of Philosophy S. Norkulov, "the view that changes in economic thinking are only a consequence of economic influence, is a one-sided approach. Economic thinking has the same character as regeneration, change and transformation under its immanent laws."

Innovation is a Latin word, which means news and introduction. Sometimes the terms "innovation" or "invention" are used together. Innovation is often associated with creativity, especially scientific and technical, and economic research. As a result, any type of creativity, innovation, research is presented in the form of innovation. Dr. Alimasov, a professor of philosophy, objected to this approach, suggesting that innovation is a creativity, a discovery aimed at radical renewal in the field. However, we are interested in innovative thinking and its compatibility with economic thinking.

Innovative thinking is the intellectual potential of creating unique creative innovation. It is essentially continuous research, renewing and refining real life with unusual creative activity. Any innovation is not innovation, but the ultimate goal of innovation is to radically update the intended field from a scientific, technical or organizational point of view.

As mentioned above, socio-economic relations are dynamic in nature, and they tend to change. From this point of view, economic thinking requires innovation. It is the main symbol between them. Under the current circumstances, the government is committed to providing the business function, namely, scientific knowledge and ideas. That is why in the official 13 documents of the leading countries, the development of scientific and technological development is considered as a single chain, the application of scientific ideas, the widespread use or use of innovative business. Under the conditions of a market economy, products based on knowledgeable and high technology are in demand not only in the domestic but also in the foreign market. That is why the market for new and advanced technologies is growing all over the world.

As the majority of the population is young, more than 60% of the population is young people under the age of 24. Uzbekistan has great potential in this regard. Particular attention should be paid to supporting youth initiatives and innovative projects in various socially important areas. It is worth noting that today in our country, programs and activities aimed at solving the problems of youth, providing the younger generation with a worthy place in life, providing them with jobs, living a healthy life, shaping the modern world outlook in the minds of youth, The most pressing issues are the elimination of barriers and the creation of conditions for full exercise of their rights and freedoms. The Chamber of Commerce and Industry of Uzbekistan and a number of partner organizations are currently implementing a project "One Entrepreneur - Three Partners" in order to attract young people to entrepreneurship and improve their skills. The following results are expected from this project:

- Increasing the contribution of entrepreneurs and citizens in the socio-economic development of the regions;
- Creation of new business entities;
- Provides practical assistance to citizens in starting their own business;
- Creation of an electronic database of advanced entrepreneurs throughout the country and its wide use;

- Expands opportunities for finding a business partner.

In conclusion, it is important to focus on the following issues in broader involvement of young people in small business and private entrepreneurship:

- expanding access of young people to small businesses and private entrepreneurship through credit, raw resources and public procurement systems;

- Creation of favorable organizational, legal, financial mechanisms and conditions for development of export potential of small business;

- Systematic control over the provision of targeted loans to young people to start their own businesses and to ensure that they are spent;

- Further improvement of legal and regulatory documents aimed at establishing and strengthening the middle class through the further development of small business and private entrepreneurship among young people.

-Organization of the activities of economic entities, businesses and service providers in economic thinking ordinary forms a systematic, stable relationship between them.

The economic model that has been created has the same effect in all parts, making the entire system more efficient. However, this system requires that the economic model needs to be renewed over time and innovation, and even the whole system (facility, institution) may go bankrupt. Therefore, economic thinking effectively operates economic entities when supported by innovative thinking.

Economic thinking is the customer for innovative thinking. The direction in which innovation thinking is pursued depends on that customer.

The state, political, legal, economic, and cultural systems can sometimes be customers for innovative thinking. It was signed by the President of the Republic of Uzbekistan on September 21, 2018. It is possible to recall the Decree «On approval of the Strategy of innovative development of the Republic of Uzbekistan for 2019-2021». Observations show that Uzbekistan ranks 122nd out of 130-140 countries on the introduction of scientific and technological developments and innovative discoveries.

Economic thinking and innovative thinking are interconnected through the development of human capital. The above decree states that economic and innovative development of the country is "the main goal of the Strategy".

Thus, economic and innovative development is the result of relying on human thinking and potential and utilizing it effectively.

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THE DEPORTATION OF PEOPLE TO UZBEKISTAN DURING THE SECOND WORLD WAR AND THEIR FATE

Abstract: *The article is based on archival documents and new scientific literature issues of deported peoples in Uzbekistan in the period of Second World War. Therefore, in this research showed that the statistical data on the numbers of forcibly expelled peoples and ethnic groups are given as well.*

Key words: *deportation, Second World War, "punished peoples", ethnic groups, Koreans, Poles, Kalmyk's, Crimean Tatars, Meskhetian Turks, special settlements, rehabilitation.*

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Introduction

The history of deportation is important research among the historians for many times. Therefore, the deportation of deaf kulaks in the 1930s is the first period in the history of special settlements in the USSR. The number of dehkans listened to in 1939 was more than 93% of all exiles. The remaining 7% were politically motivated exiles from major cities and small towns and were deported on border clearance [1, p.58]. The second wave of large-scale deportations took place in the 1940s and 1945s, with a certain wave of deportations during that time.

In April 1940, the second Polish deportation was carried out in accordance with the decision of the Political Bureau of the Central Committee of the Communist Party of the CPC (b) of March 2, 1940, no. Nearly 61,000 people - family members, former police officers, police officers, jailers, government officials, property owners (deportees, businessmen, bankers, traders, etc.), "Members of the rebel and anti-extremist organizations" were deported. The deportees were mainly Poles and were deported to Kazakhstan and Uzbekistan in an administrative manner [2, p.53].

RESEARCH METHODS

In the Decree of the Supreme Soviet of the USSR dated June 22, 1941, the military government had the right to deport people who were deemed "socially dangerous" from war zones [3, p.112]. Exactly during the war years exile of separate peoples of the USSR, including those with administrative-territorial autonomy, became popular. In 1941-1942 - ethnic Germans, in 1943-1944 - exiled Karachays, Kalmyks, Chechens, Ingush, Crimean peoples (Tatars, Bulgarians, Greeks) and others. The "deaf kulak" has declined significantly during the war. However, this reduction has been compensated by deportation, which is the so-called "punished nation". Ethnic deportations of 1943-1944 were not "preventative" but rather a "punishment for crimes against the Soviet state" during the war. Six people - Karachay, Kalmyk, Chechen, Ingush, Crimean Tatars - were deported under the same label. On January 2, 1944, as a result of a special operation called "Ulus", all Kalmyks were deported from the territory of their autonomous republic to Ural. According to the USSR IK Directive №544 rs dated 11 March 1944, the remnants of the Rostov and Stalingrad regions (3714 persons) were deported to other regions [4, p.120-121]. The some of them were sent to Uzbekistan.

In May 1944, the People's Commissioner of Internal Affairs L.P. Beria instructs the NKVD's

territorial bodies to determine whether the Caucasus peoples should be deported to the Kazakh SSR and to the Uzbek SSR. By April 15, 1945, only 2,441 Chechens had been deported from the Georgian SSR. In addition, 4,446 Chechens, Ingush, Kalmyk, Karachay and Balkans were exiled from the Dagestan ASSR, the Azerbaijan SSR, the Georgian SSR, Krasnodar, Rostov and Astrakhan regions [5, p.108].

RESULTS AND DISCUSSIONS

In May-June 1944, Crimean Tatars, Bulgarians, Greeks, Armenians and some other ethnic groups were exiled from Crimea. Crimean Tatars according to the decisions of the State Defense Committee №5943ss of April 2, 1944, №588ss on May 11, and №5937ss on May 21; Crimean Bulgarians, Greeks and Armenians by Decision №5984ss of June 2, 1944; On June 24, 1944, under the decision №6100ss, the expired foreign national was deported "Representatives of the Crimean Turkish, Greek and Iranian populations".

The main operation of deportation of the Crimean peoples began in the morning of May 18, 1944 and lasted 3 days. There were 228,392 registered Crimean peoples, 224740 of whom were deported on May 11 and June 2, according to the State Defense Committee. Of these, 191014 were Crimean Tatars.

Of the deported Crimea, 15,1083 people were placed in the Uzbek SSR (56,000 in Tashkent region, 32,000 in Samarkand region, 19,000 in Andizhan, and 16,000 in Ferghana region). The rest were sent to the Ural (Molotov and Sverdlovsk regions, Udmurt ASSR), to the European part of the USSR (Kostroma, Gorky, Moscow and other regions, as well as Mari ASSR). 3652 people (3531 Greeks, 105 Turks, 16 Iranians) were deported to the Ferghana region of the Uzbek SSR by the decision of the USSR Defense Committee on June 24, 1944 [6, p.137].

The State Defense Committee's decision of June 2, 1944 provided 500 grams of bread, 70 grams of meat and fish, 60 grams of groats, and 10 grams of fat per day according to the norm №1 to provide deportations along the way. We can say that this was more than the norm for prisoners of war and prisoners of war at that time. This has kept the exiles from dying of starvation along the way. For example, 151529 Crimean Tatars of 151,720 Tatars who were deported to the Uzbek SSR in May 1944 were admitted by local NKVDs, that is, 191 people (0.13%) died along the way [6, p.138].

In some cases (mainly in the Kalmyk exile), fatalities were more common. 1640 people (1.6%), including 642 children and 736 elderly, were killed in the process of transporting Kalmykia to the area. Also, 1,010 of those who reached the exile site were hospitalized [7, p.10]. It was not the cause of starvation, but the outbreak of infectious diseases among the exiles along the way, and the result of poor medical care. In addition, there have been various difficulties among exiled Crimean Tatars and other Caucasian peoples, with the deaths of Crimea reaching 16,000 in 1944 and nearly 13,000 in 1945 [4, p.127].

On July 30, 1944, in addition to ethnic deportations, the USSR issued a directive "On the registration of special settlements in the family residence of the demobilized Kalmyk, Karachay, Chechen, Ingush, Balkar, Crimean Tatar, Bulgarian, Greek and Armenian" [8, p.44]. On all fronts special orders were issued to relieve Chechen, Ingush, Karachay, Balkar, Crimean Tatar, Kalmyk and others from the Red Army. Red Army personnel were sent to special settlements. According to the special settlements, ordinary soldiers, sergeants and junior officers were dispatched, while senior officers were left without military service, while senior officers were dismissed and sent to special settlements. All of them were seized military cards, banned from wearing military badges and carrying weapons [9, p.56].

According to the decision of the State Committee of the Defense of the Republic of Uzbekistan №6279ss of July 31, 1944, the Meskhetian Turks, Kurds, the Hams, Azerbaijanis were exiled from the border areas of the Georgian SSR. Exile took place 3.5 months after the decision was made - in mid-November 1944. Within three days, 25 eschelons were sent to exile sites. The total number of settlements reached 94,955, of which about 80,000 were Meskhetian Turks, 8694 were Kurds and 1,385 were nurses. More than half of the exiles from Georgia (53,133) were placed in Uzbekistan (28,598), Kazakhstan (10546) and Kyrgyzstan. They were mainly involved in agricultural activities [10].

CONCLUSION

At the end of the war, in 1937, the movement of Koreans deported from the Far East to Kazakhstan and Central Asia to the status of deportees began. The Koreans deported in April 1945 were 123,000, of whom 46,000 were living in Kazakhstan, 74500 in Uzbekistan, about 1,000 in Tula and Moscow provinces, and 1,500 in the Komi ASSR. Until now, they were in the "administrative exile" status.

The number of exiles, deportees, and special people in the USSR has steadily increased over the years. As of January 1, 1944, their total number (excluding the Koreans) was 1,938,539, as of January 1, 1945, 2,094,562, and on January 1, 1946, 2,244,749. As of April 1, 1945, 19,238 persons were registered in the Uzbek SSR.

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SOURCES OF «MAJMA AL-MASAIL» AND POETIC INTERPRETATION OF THE QUESTIONS OF FIQH

Abstract: *In the article, sources of the work by the author under the pseudonym Afzaly «Majma' al-masayil» devoted to fiqh questions and poetic interpretation of the matters are considered. Questions of fiqh quoted in the margins of «Majma al-masayil» are the sources of the work as well. The majority of quotes are given in Arabic from the Koran, hadiths, rules of Sharia as well as from the works devoted to Islamic doctrines such as «Hayrat al-fukaha», «Mukhtasar-i vikaya», «Hidaya», «Kanz al-ibad», «Fatavat al-amniya», «Salat-i Masudiy» and «Favayid».*

Key words: *Afzaliy, "Majma al-masail", hadith, line, quote.*

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Introduction

It is well-known that the rich spiritual heritage of our people goes back to the distant past. The great works of our great thinkers, who have made a significant mark on the history of world culture, have left a vivid impression on all stages of human development, and this rich treasure has been studied with great interest by the people of the world as the spiritual values of the Uzbek people. It is already natural that the worldview of our ancestors, the spiritual world, is reflected in the manuscript sources and is one of the most effective and effective tools in raising such a responsible and responsible person.

Ibn al-Asir [4.] Minhojiddin Usman bin SirajiddinJuzjani [11.], Father Malik Juvaini [10.], RashiduddinFazlullah [6.], Ibn Battuta [5.], Hasanhoja Nisori [8.], Mawlano Muhammad Dusti [7.], Written to study the scientific and educational environment in Movarounnahr historical sources [1.].

The study of the expression of the philosophical and aesthetic worldview of our people in artistic works is one of the important factors in the development of literary studies and religious studies, along with the effective impact on the development of a number of disciplines. In this sense, a thorough and impartial investigation of such works remains one of the urgent tasks of literary criticism and source study during the period of independence (Hasanov 1993).

Majma'u-l-masail, written by Afzaliy in 1700 A.D. [2.] is one of these works. The book contains commentary on the quotations in Arabic by poems in the Turkish language. Most of the comments cited are devoted to the little-known jurisprudence, and their sources are cited. Most of these quotations in Arabic come from the Quran and hadith or from scholars' works on Shari'a rules, Islamic beliefs and principles. Preferably cites them in the margins and cites sources, each with a poetic interpretation in Uzbek.

At the beginning of the work, the quote in the first paragraph is a hadith about JalaluddinRumiy's book "Masnawi-iMawawi", which illustrates its meaning in the following verses:

I would make a hole with a stone, O dear one,
Be honest and make good stuff.
Whoever doesn't dare O so-and-so,
It is no doubt to be without religious, with you [2. 49b).

After the introduction, Afzaliy goes to the description of all the imams. First, it was a jurist, a scholar, a great imam, and the founder of the Hanafi

school, Abu HanifaNouman bin ThabitKoufi (Imam A'zam (699-7763), followed by Abu Yusuf Jacob (795), who developed the Hanafi rules and then Muhammad, a Sunni religious law. The Maliki sects founded by Ibn Idris al-Shafi'i (767-820) [3.] and finally Malik ibn Anas Abu Abdullah (713-795) are listed separately [2.] and their status in the Islamic world is respected.

Preferably describe them as follows:

Those imams who made inspiration,
Thank you for your mercy, O prayer.
First of all, Imam-iNo'man with pure again,
Let it be tolerant and religious of Shar'i Mustafa,
And this is Yusuf-i judge as well as,
So Allah is pleased with him.
The victory of Shafi'iIdris-iMolik,
They gave adorn the Shar'a-i human.
The ghost of paradise in Paradise,
Do not grieve for the sake of His mercy.
They built the house of religion,
They thought that Doomsday would not destroy.
Thank you, all things are true,
Sardar-i-hama has become a shariah.
Whatever is pleasing to God,
Narrative truth has drawn near.
With the condition of Afzaliy, O God,
Forgive me, don't lose faith.
Blessed are the souls of the righteous,
Full of faith in all people.
Afzaliy roamed in the desert, O son,
The Imams were step by step [2. 49b-50a].

He then draws the reader's attention to the verdict of an issue from the Fawaid-iMukhtar in the margin. It states that anyone who disregards religious rules should be executed by the Sultan. The quotation from the work of Mevlana Rumiy in the preface is included in his book as a separate issue and describes it as follows:

This is an example that everyone refuses,
Although it is a short example,
The beginner was not among beyond all questions,
Kill, be aware, sultana is necessary, canon.
That is, it is Turkish or Persian,
"I am wrong in my actions", O beardless.
The king is one, his dress is different,
All you have is a hoodie.
Afzaliy may have seen the pre-eminent "Tamhid-i-favayid",
Writing with poetry "Amniyya" is a true religion [2.50a].

Thus, Afzaliy says that a person who thinks that the religious rules, some of which are minor, cannot be done, or who has not acted negligently in terms of their expression in Turkish or Persian, is subject to punishment. Afzaliy, when interpreting each issue in the poem, he also cited its source. The poem also states that the source in the manuscript is the work of Tamhid-iFayid.

In the following passages, Afzaliy emphasizes the need to abide by the religious rules cited in this source, noting that it is a mistake and that a person who denies a duty is declared a pagan. In particular, the Statement of the Original Issue states:

If he says with every expression, O needy,
See the whole advice, beggar.
If the whole advice is correct,
You can obey it well.
Everyone says, "I don't do it",
The profound Shariah is an unbeliever.
Afzaliy saw LomashoNo'man,
With his poetry he mentioned it to you [2. 50a].

The next issue is about ablution. On the page 51 of the Majma'u-l-masail manuscript, it is said:

Everybody wakes up in the vicinity,
Know that he is a dummy in Salat-iMas'udi.
Asked, you know, that Hanifadin is good,
Let's say the answer is "lo hayirfiqhi",
Everywhere, even if it happened,
Let them not show it, O lad.
Afzaliy commented it in detail,
"The Summary" of the religion reported [2. 51b].

An excerpt from the "Summary" in the editorial says the following:

موضع الذي يقال له بالفارسية كرداب. لا يجوز التوضؤ فيه (خلاصة).

That is to say, the Persian word "dirt" (in comprehensive dictionary of the Uzbek language). It is not permissible to do ritual washing before prayer in Islam ("Summary"). One of the issues raised in the book is the washing of organs:

Even the gentleman has some members
Washing, lying down or sneezing
If his body has it less or more, he is fluent,
Look, he is washing his body, O some certain.
This is the saying of famous name of Imam,
In other words, No'man is a power to shariat.
Afzaliy saw "the Sirajiy" step by step,
I gave a message to the talibans.
This narration is from "the Mukhtasar-iViqoya",
Whoever reads Islam is a capital for everyone [2. 52b].

This interpretation is mentioned in the work of Kazihan, written in the hanafiy sect, and its Arabic text is as follows:

إذا غسل بعض الأعضاء ثم نام أو الحدث ثم غسل ما بقي (قاضيخان).

That is, anyone who has had to wash his body and then fall asleep or defile it will wash the rest.

On the page 53a of Majma'u-l-masoyil, the information in the "Basin and brook descriptions" draws attention. The quotation is from the work of "Hizona" (Book of hizana). The text in Arabic language:

توضُّؤ الحوض أفضل من توضُّؤ في النهر و العكس في القياس (خزانة).

Contents: Purification in the pool is better than ditching; in contrast it is the opposite.

Make it a pool, O religionist,
Afzaliy took the high pit of a ditch.
Aware, it is an analogy to say enigma,
This is honey, remembering every bit.
"The Summary" is also close to Hizona,
Afzaliy said, be amen [2. 53a.]

The next issue is about kidding, laughing, and explaining to the reader that Afzaliy expressed such as the precious man's ablution and his ghost laughter or punching will not be broken by:

Be aware that when performing a gusl with an ablution, so and on,
Laughter is either good or bad.
Afzaliy used the poem from "Muhtoriy",
And it is also from the famous Sharh-iKhoniy [2. 53a].

The Arabic text in the "Mukhtar al-fatawa" (Muhtorulfatawa), which is the basis of this poetic interpretation, is as follows:

لا تبطل القهقهة الطهارة و الغسل (مختار الفتاوى)

That is, laughter does not remove an ablution or a gusl.

In his work "Majma'u-l-masail", Afzaliy specifically mentioned Friday prayers, which raises several issues regarding the sermon on the prayers. One of these is the issue mentioned by Tahawiy:

ذكر فى الطحاوى و فى شرع الإشارة و لا ينبغى أن يكون
الإمام فى الصلوة الجمعة غير الخطيب
لأن الصلوة الجمعة مع الخطبة كشىء واحد من حيث المعني
(محيط)

It is written in "Miqroziy" that when a private person is the imam for the Friday prayer, he is the leader of the prayer. And "Amniyya" says that it is not permissible. For the Friday sermon is the same prayer. Afzaliy described this in the section, "When someone gives the khutba and performs the prayer":

If someone gives a khutba and someone does a prayer,
It might be possible, I said to you, people of community.
This is the narration of asah, O people of the heart,
Afzaliy said from the real "Miqroziy".
But it is said the prayer in "Amniyya",
If you know it, O people of community!
Friday's khutba base for him,
Both are in one sense, O beardless,
So let it be, O shelter,
Afzaliy wrote like "Sharh-i Khan" [2. 66a].

He also mentioned in detail the rules of prayer in the preferred work. It is noteworthy that he has collected and presented information about prayers that are performed on bare heads, snow, mud, sick and animal skin that are not available in most sources. For example, it is permissible for anyone who is praying over animal skin, but it is permissible to do so by turning the upper part of the animal's skin to its feet.

Afzaliy relates this issue in the section on "the description of the animal's leather armor" based on the hadith of Bukhariy:

Whoever makes a prayer-mat from animal skin?
When he does, and he prays with necessity.
So how soon is it, O my God?
Let your head down, O amen.
Who does it otherwise, O certain,
The prayer will be worship of the idol.
Afzaliy saw "the SakhikhBukhariy",
He said to you with poetry, be aware of it [2. 82a].

Or, in the "Narrative of snow praying" section, mentioning the possibility of praying in the snow, then it is permissible to pray in the prostration if the forehead and the nose touch the snow, otherwise it is not permissible. Afzaliy noted that this information was taken from the books of "Kazihan" and "Hizona" (the book xizana) and describes it with the following lines:

If anyone does pray on snow,
It is for Almighty God which doesn't need .
Deciding if time is the front line,
It is time for pray immediately.

If the front doesn't make a decision,
It is not possible algae prayer, O success.
"Qozixon together with "Hizona" Afzaliy
He saw a vase, octal number, O guardian [2. 80a].

In another section of Afzaliy with entitled "Praying if the bandits do not tie the knot", it is unacceptable to pray without the bandage. The poet of this narration is based on the information given by the poem of "Muhit-imukhtar".

If praying without tie robe
His prayer is not good; people are not pleased with him,
If the girdle is loose and the waist is loose,
And accept it will be properly.
This narration is known from "Muhit-imukhtar",
Afzaliy used the precious pearl of profit [2. 82b].

In Afzaliy's poetic work of "Majmaul -l-masail" on the prays chapter which addresses important issues concerning funeral and funeral prayers, as well as prayers for the salvation of graves and the afterlife. For example, on the page of 89a, it is stated that the pieces in the coffin belong to the imam; the details of who touched the pieces in the coffin are as follows:

Even if the governor is an excerpt of dead bodies,
It is the duty of imam, all of you.
And if a tear struck him in the grave, son,
It is impossible for shariat completely.

Imam can be the whole properly,
So it is not lawful for you to waste.
Do not do without permission of Imam,
Who will be the victim of it all?
Said to dear people of Samarkand,
And no more to people of Khorezm again.
This is the case with "Majma'u-l-jarrin",
Afzaliy saw and wrote, O God.
Afzaliy, if you know, the descendants of Ali,
The remembrance of Allah is always in remembrance of Him [2. 89a].

In the poem's conclusion, Afzaliy referred to himself as a descendant of Hazrat Ali.

The quote from the work "Amniyya":

لا بَأسَ بأَنْ يُلْقَى تَحْتَ المَيّتِ قي الْقَبْرِ مِثْلِ الثَّوْبِ والْفر و هُوَ كَزِيادَةِ الكَفَنِ (فَتاوى ابو لَيْثِ، أمنية)

The interpretation of Afzaliy:

Be very dead inside the grave,
Lay the beds comfortable, O you truthful.
That is, the bed, the pillow, O son,
It will give the shariat completely.
"Amniyya" is a great event in the grandfather's funeral,
You can see me, take a look, O thou.
Also it is saying in FatawaAbullays,
Afzaliy cited in his poem obviously [2. 91b].

The hadith of "Sharh-i-euridiyya" (Interpretation of avrod) states: "A person who prays two rakats on Friday night and recites suraFatiha, suraOyatul once, and suraZalzal three times in every rakat". Afzaliy was able to convey the meaning of this hadith skillfully to the reader in the following verses:

Almighty Jibriilwas asked, O Khasan,
Teach me a prayer man.
I hope the education of the whole human,
That it may be the torment of the grave.
Gabriel said, O Messenger of Allah,
This is an elite gift to your human.
The Almighty has sent,
Say this to your human as a gift.
What kind of lord did he ask?
I respect my community.
Two rakats, O high-priest,
Read on Friday night time.
Fatiha, one Ayatu-l-Kursiy, again
Read three times the Zalzalat.
It is a prayer if everyone performs it.
He's a goddamn chap with necessity.
Know then that there is no torment for it;
Go and read this prayer, O authentic one.
I am in the gardens of Ahodis, O son,
A beautiful clean tar with a flower seed.
From "Sharh-i-avrod" saw and became a poet.
Afzaliy was a supporter of the Talibans [2. 98b].

When a person sits in his or her own place after sunrise after Morning Prayer, which is quoted from "Fawaidi-zaxira on the page 100 of the book "Majma'u-l-masail", Allah accepts his repentance before his death sustains his body, fills his heart with love and lives. Grant him good things, make a perfect believer out of this world, give his book to his right, pass the Sirat Bridge at lightning speed, widen his grave, and bring this man into Paradise without reckoning. Hadith about the menu. This topic is covered by the following passages in Afzaliy's interpretation:

So everyone should read it,
Woe to the hereafter, O beggar.
Narrative of the Messenger of Allah,
Accept the human, O Allah!
If everyone passes by, be aware at dawn
When the plague strikes on the floor, O lad.
That is, know where the sun is,
So God is good.
God for ten wonders,
Listen for a second, O you needy.
Know first and accept repentance,
Make your living more prosperous.
And third, it is healthy, O lad,
Fourth, the people are unlikely to be friends.
Fifth, the moment of cruelty,
Sixth, faith is gone.
Seventh, a book in the right book,
And God does not suffer that slave.
Eighth, thunder goes via like Sirot Bridge
Ninth will be the tomb without right.
The tenth is to enter Paradise,
Count on countless numbers, count on [2. 99b].

Consequently, Afzaliy presented a number of works on jurisprudence as proof of the accuracy and consistency of the issues in his "Majma'u-l-masail", including AlouddinBukhariy's "Hayratu-l-Faqhaho", "Sharh-i-euridiyya", "Al-Muhit" by Burhonuddin Mahmud al-Bukhariy, "Hidoya" by BurhanuddinMarghinaniy, "Kanzu-l-worship" by Muhammad Amin ibn Ubaydullah, "Masud ibn Mahmud ibn" Yousafzani Samarkand's "Salat-iMas'udi", "Fawaid", "Mukhtar-l-Fatawa" IddiRumiy's "Masnaviy spiritual and "Arbain", as well as "Qozixon", "Dajiziy", " Summary" and a lot of work quotes were indicated. The poet aims to contribute to the spread of Islamic enlightenment among Turkic-speaking peoples through the use of Turkic poetry in the Arabic and Persian issues and matters of fiqh.

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IMPORTANCE OF EXTRALINGUISTIC AND PARALINGUISTIC FACTORS IN LITERARY DISCOURSE

Abstract: *In this article presents theoretical ideas about the aspects that should be considered in the analysis of literary discourse. Also mentioned about the importance of extralinguistic and paralinguistic factors that forms the basis of literary discourse.*

Key words: *literary discourse, means of descriptive expressions, contextual analysis, communicative processes, linguistic means.*

Language: *English*

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Introduction

Emile Benveniste, a linguist who brought the concept of discourse to science, argued that the term refers to the speech process of the speaker. He argued that the discourse is the product of speech and expresses the speaker's knowledge and skills, and that his or her place in society can be shaped by his or her position (Benveniste 1974). From their point of view, the linguist prefers to analyze the discourse based on its functional features.

The concept of discursive analysis, introduced by Z.Harrison in 1952, emphasizes not only the phonetic or syntactic features of the text but also their cultural heritage and values. In the course of the analysis, the structure of the discourse is also of particular importance.

Later, in the 1950's, many linguists argued that the term discourse was directly related to text linguistics. As a result of this emphasis on linguistics, some discrepancies between the text and the discourse is revealed. For example, if the text is an intangible structure of the same style, the discourse is the extrinsic factor that affects the speech process and changes in the human mind.

Another representative of the discourse analysis is the Dutch linguist V.Dyke has also offered a number of comments on science. According to Van Dyke, discursive analysis covers 2 main stages.

• The analysis process should cover the structural features of the text, from phonetics to syntax.

• Contextual analysis. An important aspect of discourse analysis is that the structural nature of the text reveals its essential features.

The French linguist Elizabeth Le recommends 3-step review of the discursive analysis.

1. In terms of language expression
2. By shaping the community
3. Based on the relationship between social groups and people

As discussed above, it is difficult to say which factor is more important or which is less important when considering discrete analysis in 3 main stages. Because there are no obvious differences between them. It is important to note that the cognitive research of the discourse requires researchers to carry out their research in a variety of disciplines. Discourse analysis is interdisciplinary, directly related to semiotics, ethnography, psychology, pragma linguistics and many other disciplines. However, most of the research related to discourse analysis in the aforementioned disciplines is related to linguistics. According to Van Dyke, scientific work on the

cognitive analysis of discourse differs from the individual's chosen method, science, and individuality. Van Dyke examines cognitive discursive analysis in two steps. That is, text analysis involves the study of the phonetic, orthographic structure of the text, as well as the phased study of the morphological features, the syntactic features of the discourse, and the role of semantic and lexical units. The second phase is contextual analysis that examines the social relations of events, time, space, time, participants, and their cognitive characteristics.

Use common fonts, colored fonts, or different shapes and colors to form a general discursive view. This allows you to have a basic overview of the same text.You can see this in more articles, newspaper ads, and banner ads. The syntactic structures have a number of unique designs. Van Dyke proposes an analysis of the unconventional syntactic structure in the selected text. That is to say, in many European languages, articulate + horse (article + noun) is a traditional form of grammatical rules, which states that this does not apply to analysis [2.153-211 p].

In the lexical semantic analysis of the discourse, it is important to clarify the meaning of the lexical units used in the text. At this stage, it is necessary to consider the significance of the event in the discourse or the language units that characterize the character of the participant. For example, use positive word (positive word meaning) to reveal positive personal characteristics, and negative word meaning (negative word meaning) when expressing negative meaning. T.A. van Dyke further states that the main component of any text is language. Expression tools serve as a basis for the reader to see how reliable and relevant the text is [2.153-211].

Discursive analysis requires a holistic approach not only to the structural properties of the text, but also to the context. Context analysis can be viewed in several stages. These include setting, time, time, location, event / action (event / action), and participant. While the above steps are important, an even deeper approach requires consideration of the following categories. That is, the domain (domain), the roles of the participants in the discourse, the social relations of the participants.

As we examine the scope of our activities, it is important that the parties involved in the dialogue know exactly what field they are involved in. For example, the interviews of members of parliament involved in the political field are composed of terms, phrases and terms that directly relate to this field (political discourse), or that the teacher's field of activity is directly related to education or education. (pedagogical discourse). As it turns out, every industry representative will be interviewed within their professional activities. There is also a general category for callers, including public (public domain) and private (private domain) phases [2.153-211.]. Context analysis only emphasizes the cognitive nature of the participants, in contrast to the role that participants play in their communication, their social relationships, or their area of activity. This is one of the key aspects of dialogue participants' intentions, their opinions, and their beliefs in the context of discourse context analysis. If these aspects are ignored, the purpose of the communication remains unclear.

The study of the use of the paralysis in the fiction shows that they are mainly used in the author's discourse. The nomination of paralinguism is the standard nomenclature, which is understood by the common use of nonsurgical means, as well as the non-standard nomination, which represents the complex kinematic process used by communicators during communication.

For example, movies such as eyebrows, eyelashes, and nodding have been formed as a vocabulary and have a definite meaning.Images of a communicative act in a speech (in the author's speech), with his tongue closed, his eyes closed, his head close to his right shoulder, and his two arms open to convey the idea that he is dead , the sign of death by means of a body motion is given in a linguistic description and is a non-standard nomination. At the same time, even if the foreigners do not understand, the pronunciation of "he is dead" also provides additional information to the addressee. As you can see, in addition to speech, the interviewees are involved in eye contact, eye, tongue, face, shoulders, hand movements and procedural means. Complete verbal expression of the communication process involves the linguistic and non-linguistic means of creating a dialogic act.

Any speech can take place in a certain space, in a certain situation. Even in fiction, this process of speaking is shown by the circumstances. It is hard to imagine the creation of characters without gestures. This is because anyone who uses linguistic means in the process of speaking is more likely to use paralysis tools, including gestures. Therefore, scientists and experts have also commented on the history of gestures.

According to Van Dyke, the main role of communication participants in revealing the character traits is their social attitudes, cognitive skills, and skills.

Somerset Maugham's story of Louise portrays only a self-righteous person. It is through this story that we examine the analysis of the concept of selfish (selfish). In Uzbek and in English this word is negative. Looking at the English commentary above, 1) holding one's self interest as the standard for decision-making, and 2) putting one's interest and profit on first place and thinking only about himself or herself. In the cognitive analysis of the word selfish, we find many other meanings: egoistic, greedy, miserly, hoggish, mean, narrow, stingy, mercenary, egocentric, ungenerous, prejudiced. Louise, the

protagonist of the story, had a heart attack when she was a child, and her parents did not believe her in the sky. He was protected from all kinds of hard work. Louise's lifestyle, her self-esteem, and the way she treats people around her and her self are evident. “I knew Louise before she married. She was then a frail, delicate girl with large and melancholy eyes. Her father and mother adored and worshipped her, for some illness, scarlet fever think, had a left her with a weak heart and she had to take greatest care of herself. I had noticed that if the fartywas amusing she could dance till five in the morning, but if it was dull she felt very poorly and Tom had to take her home early. Seeing her walk eight miles on an expedition that she especially wanted to make, I thought Tom was she stronger than one would have thought. She told me that I was remarked on her endurance “I should pay for it tomorrow. Louise's selfishness was evident in her every move, except in this process she was so humble and helpless that she felt pity for the people around her: lifestyle: she was quite lost, and she didn't know how to take care of her. She was going to bring up her dear Iris; behavior: for the next two or three years Louise managed in a weak heart spite, to go beautifully dressed to all the most lively parties, to a very heavy gamble, to dance and even to flirt with tall slim young man; character: she disliked me and I knew that behind my back she had lost her ability to say something disagreeable about me. she has too much delicacy to make a direct statement but with a hint and a sigh and a little gesture of her beautiful hands. It's too long now, don't try to be troublesome, you always speak as though you are grudged for a few years that I can look forward to live; position: in order to distract her mind she turned her villa at Monte Carlo into a hospital for convalescent officers. Her friends told her that she would never survive the strain. She was lunching at a restaurant with a tall and very handsome young Frenchman. She explained that she was there business associated with the hospital.She told me that the officers were very charming to her. How delicate she was and they let her do a single thing. As we read the story, we can see that Louise's selfish, self-centered attitude is directly due to her surroundings. He was so selfish that even some of George's actions led to his disappointment. George didn't have the willpower as her first husband, and she was tired of Louise's behavior. However, fortunately for Louise, war broke out and George returned to the military and died within three months. How can Louise with a broken heart endure a second loss? An artistic discourse is essential to gain a complete picture of any concept. In the story above, we see the potential of language tools to describe the human character and reveal its emotional state.Every expression in our language has a semantic and syntactic structure. Context analysis is very important for these features.

Take the example of Somerset Maugham’sBreakfast.

"I watched how ma’amgot them going, and as usual I talked about the state of playwrights."

It is unclear why the speaker observed the lady's greeting, and why she spoke politely. Maybe they are too close or just a casual talker, and what is the function of the metonymy that serves to express the speaker's dissatisfaction? Perhaps the narrator is not a disgruntled, uneducated, uneducated person who does not know how to choose words in conversation with the ladies. So the question is, would an illiterate talk about drama when he was an illiterate, or would he speak politely when he was an uneducated person? As we have stated above, context is not enough to justify this kind of ambiguity.

No matter how little or how much the artwork is, they all serve to make the most important of the task - the correct, clear, logical summary of the speech. In this way, each functionally speaking style is characterized by a clear expression of interdependence as well as means of individual speech acts at all levels of the language, historically formed and in constant communication with the traditional media environment. is created. In order for the speech to be effective, clear, purposeful, it is necessary to understand the stylistic resources and styles of the language used.

There is another aspect of linguistics interested in the analysis of literary discourse, and it is worth exploring it in two ways. Firstly, the text of the work is used as a material in synchronic and diachronic learning of the language, developing theoretical and practical foundations of linguistics, its current or current state, developmental laws, and scientific analysis of various categories. the material of the work is used to identify the qualitative changes taking place in the language, that is, the development of meaning. This includes all the units of the language and, according to the purpose of the researcher, is covered by a separate prism-stylistic prism. According to M. Kozhina,this audit vertically penetrates into the language units. These studies explore not only the original meanings of language tools, but also the additional meanings of textual, speech, and methodological limitations of their tasks and tasks.

As we have already mentioned, language expressions are used in literary literature to portray, minimize, compare, exaggerate, emotional and physical. The richness of the heroic speech in the work and the fluidity of the events are indicative of the richness of the writer's speech.

In the story of Jack London's Love of Life, the possibilities for expressing language are evident in revealing the characters' emotional state. For example, "If there are only two bullets in the room where we are now hiding," one of them said. In the

given sentence, the amplification of the meaning is accomplished only by the addition of two words - the suffix. It is the expression of the hero's despair and despair at the same time. The only additive above is getting emotional. Through the language expression in the example above, the context of the context, the status of the characters, is revealed. The writer has effectively used the epithet to convey the current state of heroes, to convey to the reader, as well as to enhance the sensitivity: “The other man followed at his heels. They didn't remove their foot-gear though the water was so cold that their ankles were ached and their feet went numb. In places where the water dashed against their knees, and I staggered for footing”.

We see the epitome of storytelling in the story-reading process, and it is often used by the debate, which is what the writer's style is. If we look at the phrase icy-cold in the example above, it means that cold means cold, in which case the writer chooses the word cold. This means that we can only understand the cold temperatures when it comes to the water was icy. It is important to note that any situation or perception depends directly on the student's or listener's life experience, environment and circumstances. As you know, this process is a product of cognitive activity. The above example reads that a reader who lives in hot climates does not have cold or frosty weather, but has no experience, and we can say that he or she has used the epithet of the writer to convey the situation to the reader. On the contrary, people in icy countries may fully understand the inner state of the hero and express his full sympathy and understanding of his mental and emotional state. It is possible to say that language means play an important role in the perception and understanding of the emotional, mental, and physical state of a person. Understanding this situation is a direct result of cognitive linguistics, and in this regard, the interaction between cognitive linguistics and other disciplines is evident.

In the Uzbek translation of the story, the same is repeated:

“They didn't take off their shoes, even though the water was cold. The water was so cold that his feet started to slip.

The fact that the narrative tools in the story above serve to increase emotionality directly influences the structure of the story, which is chosen according to the characters' characters, and the overall character of the story.

In Somerset Maugham’s "The Man of the Scenes," we can see phonetic changes in the suffixes used to describe the appearance of the hero: "His full, smiling face here is strange." it was. We can see phonetic changes in words during the translation process. It was possible to use the words smiling face and smiling face instead of smiling. But it is this word that is used to convey to the reader the inner emotional state of the hero by depicting his appearance. As the story unfolds, the reader will understand why the smile is chosen. Under what circumstances does a person smile, when he is proud of himself, when he is embarrassed about something, and when a person has a happy face. On the contrary, he just smiles. The writer expresses his satisfaction with the present, regardless of the past, regardless of the past. It encourages the student to think more deeply about life.

The functionality of language tools is also fully reflected in the story of Ernest Hemingway's Cat in the rain. Although the story has been analyzed many times stylistically, it has not been explored within the potential of expressive means. It is well known that the personification of the story in the story promotes the popularity of the language of the work, thereby creating the effect of the work. Each writer in the work chooses a language appropriate for his character, lifestyle, and age. The suitability of these aspects to the hero depends on the writer's potential. In the above story, the heroic woman's speech reveals her psychological and emotional state. "Being going down and getting that kitty" means that when we read the word kitty from a woman's language, we know that emotional expression is almost invisible.That is the word kitty has been used to reveal our hero's delicate nature and care. In the dialogue of the woman and the spouse, the man's indifference, neglect, as we have seen by nature, are skillfully expressed by the writer, and the tools of expression are great. "Kitty the American wife is going down and saying that. Offers her from her bed. No, get it. the poor kitty trying to keep dry under a table. Come get wet - he said.

Graduation was used to make the story more effective in later parts of the story. “The wife liked him. She liked the deadly way. She liked her feeling of dignity. She wanted to serve her. She liked the way she felt about being a hotel-keeper. She liked her old, heavy face and big hands. Liking it she opened the door and looked out ”.

In the story, we can see that some grammatical rules are violated in order to get emotional. “Liking him she opened the door and looked out”. The writer could have uncovered the emotion of the hero in the manner of "Being pleasure with him" without the grammatical error, but the sentence would not have been easy enough to look simple and simple.

The author's gradual use of heroism in shaping his speech makes the woman appear more feminine and caring in the eyes of the reader. “I wanted it so much. I know why I wonted it so much. I wanted that poor kitty ”

In later chapters, the role of femininity in the woman is replaced by obstinacy. “I want a cat, I want a cat now. If I have long hair or any fun, I can have a cat ”

In the course of the reading, the reader is not stubborn in each of his sentences, but rather forms the image of a bored woman. Expression tools serve as

the main source of the whole process in the human mind.

In our speech and of course in the literary literature, the means of expression are invaluable. As we have already mentioned, writers effectively use illustrative means to illuminate the character, physical and mental characteristics of the characters, and to enhance the effectiveness of the work.

Of course, there is talk of the formation ofsuperscriptiveintegrity, which no one can deny. But the fact that two or more sentences are interconnected and forms a whole is not just a simple process, but a very complex and intricate phenomenon.

Learning a language of fiction is a comprehensive process that combines not only literary ideas, ideas, general image, individuality, artistic skills, but also linguistics semiotics, connotations, pragmatics, and links to areas of cognitive science. it also expands its scope of understanding with such concepts as knowledge, understanding, understanding, analysis, linguistic thinking, linguistic consciousness, linguistic activity, and linguistic identity.

The main weapon of the literary text is the word. “Linguistics is inextricably linked to fiction. This is because language is not just a system of symbols that carry certain information as a means of communication, but also a powerful tool that affects the listener.

The work is well received by the reader only if the creative language can be used properly. The correct language tools will be used as a means of artistic and aesthetic influence on the reader and the event described in the work reflects the artistic features of the person.

When a metaphor is created and acted as an artistic medium, there are a number of aspects. First, the metaphor is formed in the speech process. Its formation is directly related to the thinking and thinking of the person. Human activity is so multifaceted that it observes every change in nature and society, constantly enriches its knowledge of events, things, and individuals, and their thoughts and visions as specific images. seals. When these philosophical conclusions are met, the field becomes synonymous with meaning.

Linguist M. Yuldashev points out the following differences between metaphor and metaphor: “1. In words, words have their meanings. In metaphor, words are always portable. 2. Identification compares two components - an identical object and an image. And the metaphor has one component. 3. There are many options for enlargement, and the phrase can be expanded even at the paragraph level. The metaphors are words or phrases. 4.There are special indicators for imitation: -like,-like, -like, -like, -sing, likeness, and so on. There is no such thing in metaphors. This is illustrated by the following example: Karim is a cunning fox. Comparative design. In this, Karim is the subject of identification, the fox is the image of the image, the cunning is the basis of the image, the form of the image. This is a complete simulation. Karim is a fox. This is a reduced likelihood because the sentence does not specify the basis of the likelihood (what the feature is) or the pointer. Wow, fox... (Used for Karim). It is a metaphor. It is because of Karim's cunningness. It is renamed entirely [1.100-122.]. We can cite a few examples fromSomerset Maugham The Man with the scar. In particular, they said, "Weirdly go one after the other and fall down with gruesome actions. It's like lifeless dolls. "In the example given we can see the suffix used in the above definitions. Another example from the same story is that "a woman was black in black, had hair in her hair, and her face was as white as a corpse" [3.12.].

Metonymy is derived from the Greek word "metopumia", which means a different name. “The phenomenon of metonymy is also related to the literal meaning of the words. But here, basically, the name of an event or event is moved to something else or event. This subject or event is interconnected with our understanding of the concepts associated with each other. In the metaphor, when identical objects are copied, in the metonymy these two objects have some relation to their appearance or internal characteristics, but they are not completely different.) the signs of the objects are overlaid. For example: Ranowrites to Anwar and says that you don't scold the rest of your talk from Fuzuli [4.11.]. In this case, the author's name is used by the name of the work, which replaced it. Increasing the emotional expression of a reader's aesthetic effect by using metonymic metaphorical meanings and changing the semantic structure of the words. This is also the case inSomerset Maugham’s"Refugee Tale": "Of course, we hit three or four bottles of whiskey over dinner." In this case, the aesthetic function of the language is accompanied by its communicative function in the dialectical association.

SynecdocheGreek - derived from synekdoche**.** This is also a type of trope, which is associated with the number of items used, that is, the number of parts (full, whole) of the subject. An example of this is the use of a partition (or vice versa) or plural (or vice versa) instead of one. AlthoughSynecdoche represents essentially the same phenomenon, scientific literature has been interpreted as a manifestation of metonymy as closely related phenomena. The synecdoche shows great potential for generalization, and the art does not always go unnoticed. Although generalization is one of the main forms of conciseness and is essential to the language of fiction, this feature does not prevent it from being used in other functional styles. It can also serve to avoid repetition, to express the meaning of intimacy, and to highlight some meanings. "If the bullet did not end, he would overthrow the government and now he would become a military master instead of selling

lottery in Guatemala" (S. Maugham) [3.13]. In this example, the interpreter avoids the many words that should be used to express the opinion of the government, using words that are brief and understandable to the reader.

Revival has long been used as a special kind of metaphor, both in oral and in art, as well as in analogies. It is a prerequisite for the actions and emotions of people; speech and thinking are moved to inanimate objects. In other words. depicting inanimate objects as moving, thinking, or speaking as human beings is called animation. The basis for revival lies in the transfer of human characteristics to inanimate objects. For example, the word “understand” means to surprise, surprise, or surprise something. Revival is one of the easiest ways to reveal the lyrical heroic spirit. Human relations represent both positive and negative perceptions of how the speaker responds to the person who is speaking. The revival may be different by its nature. Its use depends on the artist's artistic ability, the ability of our language to conceal its subtle and subtle meanings.

The street was cold. My luxurious home is in the warm oven of the doze off at the stove.

I put a stack of cash on the table,

I'd like to try it in my palm [5.97.].

In creating the revival, Osman Azim not only used the inanimate objects as humans, but also used them as a means to reveal the lyrical heroic spirit and inner experiences.

The antithesis is a Greek word meaning opposites. As linguist R.Kungurov thinks about antithesis, Antithesis is a form of poetic syntax that can be used to enhance logic in speech by comparing logically inconsistent concepts, ideas, objects, and personality traits, or the level of one subject or event. The opposite is true. "According to the scientist, “In our understanding of the meaning expressed through antithesis, our reaction to the overlapping phenomena is also important. For example, words such as hot and cold, high and low, great and low, bold and cowardly, generous and greedy, true and false, night and day, light and dark reaction. When describing a particular event or event, they are compared to one another by such anonymous words, and the poet expresses his or her attitude toward them, or the reader has a positive or negative reaction by portraying an event from different angles. it shoots.

In the process of stylistic analysis of fiction, the general potential of language expressions is revealed. As we have already mentioned, these aspects occur in the form of words, phrases, free or unstable combinations, and the literal meaning of the sentence enhances the art of communication or communication, enhances imagination, and enhances meaning.

William Butler “An Irish Airman Foresees His Death”

I know that I'll meet my fate, Somewhere between the clouds above

Those that fight I don't hate, Those I don't do love; in the lines [6.27.].

1) meet fate is a metaphor because "fate" is a fictional noun and "to meet" is an image that comes with an abstract horse and revives the word "destiny". This version of the English and Uzbek metaphor has served to reinforce the meaning of the text, whether it is "outdated" or "trite" in spoken language. In English, this metaphor corresponds to the kind of personification.

2) "The fate is among the clouds above" is a metaphor that the author emphasizes that he or she is waiting for someone or something by expressing that his fate is far away and in the clouds.

3) In the third and fourth lines we encounter antithesis and oxymoron. Contrary to the poet's skillful struggle to "fight against whom he may hate and watch for who he is love", the poetic views contribute to the artistic image of the work.

Language means do not form images. They enhance the expressiveness and emotionality of speech using syntactic devices. These may include inversion, rhetorical questioning, organizational fragments, stylistic and syntactic repetitions.

Authentic details in the following lines of the poem:

4) KiltartenCros. Kiltarten will be able to identify locals and locals.

My country is KiltartenCross, My countrymen Kiltarten's poor,

No more likely to cause them loss, Or leave then happier than before.

Nor law, nor duty bade me fight, Nor public men, nor cheering crowds

5) In the following lines, we find that the syntactic repetition is represented by denial loads (no likely, nor, nor). The same anaphor is used in the poem.

6) Also in these lines is gradation, strengthening stylistic meanings of the words, nor law, nor duty, nor public.

A lonely impulse of delight, drove to this tumult in the clouds,

I brought all my mind, brought all my mind, years to come, seemed waste of breath,

A waste of breath behind the years, in balance with this life, this death.

7) One of the phonetic stylistic styles we encounter in the case of repetition of sounds - an example of the alliteration of sounds. In some cases, the use of language and stylistic words are accompanied by the same text.

8) The years - metonymy is used in the sense of "life", and the expression "waste of breath" in the metonymic peripheral sense means "wasted life, life."

9) In the same example, one of the types of repetitions simultaneously represents "anadiplosis": The years to come from waste of breath, a waste of breath behind the years.

10) We also see the synonym repetition in the same lines.

The artistic method is the main means of artistic perception and expression of reality. The artistic style is also remarkable because it embodies the human nature, its inner state, its mental state, the ability to fully and completely describe the various events and events in nature. The most striking feature of the style of artistic speech is the imagery and the emotionality. If a scientific method expresses generalized concepts with specific terms and formulas, the artistic method can use the words in its resources to describe the most sensitive points of human soul and nature. In artistic style, the author effectively uses the visual aids of the language to enhance the aesthetic effect of the work, as well as create new forms of speech and expression. For this reason, writers are not limited to the use of existing words. For talented writers, the available language is always a limited opportunity.

To sum up, each language and color words are used in fiction and stylistics to enhance artistic expression. Any element of the text - words, sounds, or phrases - will help the reader to understand the essence of the work.

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THE CONTENT OF THE PERSON'S INVESTIGATION OF THE QUESTION SCOPE

Abstract: *The article analyzes the content and scope of the personality of the interrogator, the results of the preliminary investigation and its psychological characteristics using field research and scientific literatures as well.*
Key words: *trial, accused, investigation, interrogation, psychological traits, result, interrogator.*
Language: *English*
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Introduction

It is necessary to study the psychological characteristics of the interrogated, in particular the accused, in particular the other psychological states of the behavior that appear during the investigation. V. Vladimirov, A. Connie and other Russian lawyers paid great attention. They have described in their studies specific psychological characteristics that affect the behavior of the accused during the pre-trial trial. On the issues of accused psychology A.R. Ratinov, M.G. Korshik, S.S. Stepichev, P.P. Tsvetkov, A.S. Krivoshey, N.T. Vedernikov, I.A. Matusevich, M.M. Kogenov, M.V. Kostitsky, S.M. Milovidov, V.E. Konovalova, K.V. Veselkov, A.V. Sakharov, SA Antipova and other forensic scientists, psychologists, and proceduralists have paid great attention. It is impossible to successfully conduct investigative actions such as questioning, confrontation, incident checking, search, without taking into account the psychological features of the person. P.I. Tsvetkov believes that the psychological characteristics of the accused often serve as a key to his or her grief. This, in addition to other factors, helps to establish a psychological relationship with the accused, identifying the tactics of interrogating him, understanding and explaining some of his actions, thoughts and behavior, identifying the facts and falsifying their testimony, along with other evidence in the case allows objective evaluation.

Methods

Other criminals like this in their treatises according to Matusevich, in order to be able to choose the tactical methods of interrogation, the investigator must be informed of the identity of the interrogator during the initial preparation process. The same is true for other investigative actions. Attempting to find out the identity of the accused has given jurists a major concern about the psychological and social effects of psychological disorder, its formation and behavior [1, p.6].

Unlike European technologists and lawyers, former Soviet lawyers have chosen the right position in this regard. It is well known that psychologists have divided subdivisions under the basic structure, which is formed by two biological and social factors. According to psychologists, the whole person is divided into endopsychological and exopixic organizational forms. The first one reflects the intrinsic interrelation of mental symptoms and functions, such as the internal mechanism of the human personality, which is equated with the neuroscience of human development. It includes the ability to strengthen the will, memory, imagination,

thinking and technical characteristics. Contrary to natural endopsychology, which is a natural biological basis, exopsychics are defined by social factors. Experts in the modern world are eventually linking a person's brain to those key factors, which are called biological and social. As we have seen in the above works, it is not possible for a human being to maintain a biological unit that is both a product of the historical process and a subdivision of a social movement.

The natural conditions of the development of a living being dominate the formation of its individual and psychological features of the physical maturity, nerves and disadvantages of the physical maturity of the endocrine. However, the biological factor in a person gradually becomes a social one, and then lives in a social (psychological) state. The physical, natural, and physical qualities of a person are manifested in his personality. Because of the individuality of the individual, it retains traces of the natural biological movement. It is important to consider both biological and social factors in the development of personality. However, their relationship must be properly understood. Two-factor theory and the confrontation without understanding them will not help you to understand the personality disorder. The individual systems of an individual (anatomical, physiological, and other attributes) and social features are unique and cannot be understood independently of each other [2, 2015]. This is the case of I.P. Pavlov's teaching is also deeply scientific. I.P. Pavlov and his students demonstrate that, to a certain extent, the functional features and nervous system of the nervous system, which are hereditary, may change under the circumstances of human life. " Human behavior, " he wrote. IPPavlov, - not only related to other features of the nervous system, but also to the continuous effects on the body in the individual existence. that is, it depends on the constant education and training in the roof "[3, p.268].

K.K. Platonov points out that there are four divisions in the psychological shift in personality. The first is the socially justified features (interests, ideals, worldviews, beliefs, etc.); the second is the practice of human knowledge in the skills of the skill; the third - stable aspects of specific mental processes specific to a particular person (perception, thinking, memory consciousness, will, attention, psychoanatomics); tertiary - Age and sexual characteristics of the person. The biological features that are manifested in arousal, ability marks, and superior nerve features. The personality of these units or sides of a previously interconnected and conditioned person is the only psychological disorder [4, p.5].

From the point of view of psychology, jurists are more aware of the interrelationship, togetherness, and proper memory of their biological and socially determined psychological traits in the study of personality; They believe that T. Vedernikov should not be interested in the study of personality with biopsychological features, because human psyche is ultimately determined by material conditions of life - the latter implies a set of social object relations [5, p.65].

On the psychic features and symptoms of personality as Dougel put it, "Human psychology has a natural and social basis, and its features are rooted not only in the nervous system, but also in the properties of the nervous system, as well as the characteristics of social groups. If logical characteristics and traits of a person (customer abilities and others) are altered to a certain extent, it is a product of nurturing the psychic meaning (interest, personality, world view, etc.) of the social context of human behavior ". Drawing on these considerations as a retribution of psychology science, the author proposes that the person is a human being, with signs that reveal his or her mental characteristics. Intellectual, emotional, and willpowering features and specific characteristics of the person, the client, the ability, the psychic, the presence or absence of abnormalities, the age features of the psyche are the hallmarks of the subdivision [6, p.23]. Although A.S. Comments by Dagel K.K. It differs slightly from the Platonov concept. Impact can be tactically justified and, on the contrary, disadvantaged to a poor person. In examining the identity of the accused, it is necessary to pay attention to the specifics of the remaining processes, the success of one or another of these tactical methods depends on the knowledge and accounting of the working processes.

It is necessary to study the individual psychological characteristics of the accused and determine whether he or she has been tried or acquitted before. For recidivists, the identification of non-social orientation traits and their repeated crimes is of particular importance in their investigation. In other cases, a better search for a person's social orientation, other characteristics, as well as their behavior and criminal behavior will help. For example, the looter has more traits such as hypocrisy, hypocrisy, covetousness, and covetousness that hides and destroys these unchanging aspects of their criminal behavior that can bring them success.

The inferior social orientation of the bully is characteristic of the inability to cope with feelings and to stop trivialities. The traits of malicious assumption are more prominent in his character. Therefore, information about the behavior of his character is tactically relevant. The complex of individual psychological features of the bully is a characteristic of his attitude towards others and himself. For the first one - kialicism, neglect, indifference. arrogance, and the like, may come with pride, haughtiness, greed, and selfishness. Detecting them is important in addressing the tactical objectives of the investigation. When talking about the psychological characteristics of the defendants, it is wrong to assume that all the perpetrators have only negative characteristics. Such

an idea is incompatible with the legal procedures and the tactical tasks of the preliminary investigation. Not everyone is aware of a crime going against law enforcement or because they do not want to live a normal life. In this case A. Yakovlev AM He agrees, in particular: “A special group of recidivists constitutes criminals who commit two or more crimes, but not the degraded, socially disadvantaged persons, but of their social influence. as a result of breaking out of relationships and relationships. ”

In terms of tactical investigations, it would be very helpful to identify the circumstances of the crime committed by the defendant and the way of life before the crime was committed. Investigation of the psychological characteristics of the accused is important in solving many other problems of the investigation. Several defendants in their previous criminal investigations decide not only the facts of the case, but also the characteristics of the interrogated person when deciding whom to investigate first, second and then. It is usually advisable to interrogate the accused, who is supposed to give more direct evidence than anyone else. The available information on each person's personality can tell which of your defendants can testify. Obedience, special knowledge, habits, skills, etc. are of paramount importance. Taking into account these features, other evidence is also evaluated [7, p.56].

Investigation of the accused person during the preliminary investigation is extremely important for lawyers, especially for his or her knowledge of investigating specific crimes, tactics and techniques. There is a close relationship between the various tactics and the methods of investigation that characterize the accused. Investigative tactics and methods, examples of the investigation, scientifically-grounded recommendations about specific methods, methods and methods of carrying out specific investigative actions. Without taking into account the identity of the accused, it is impossible to ensure the accuracy and usefulness of these recommendations. The importance of using this information in preparing and conducting investigative actions should be summarized in general.

It was mentioned above about the role of biological and socially determined factors in the behavior and formation of a person. In the process of covering this issue, conclusions were drawn that could be used to address the tactical tasks of the investigation. For example, based on the biologically determined characteristics of the defendant's nervous system type, ability, etc., the investigator may have important implications for any particular investigative action, for example, whether the defendant may have resisted for a long time, behaved in a difficult situation, or made illogical actions. whether the defendant does not burn, whether there is any indecision, whether there are symptoms of rapid irritation or excitement (whether they are persistent or persistent), mood swings, suspicions, maladaptation, and so on. The Trojov's knowledge of this, as well as other features, may help him to find a way of dealing with the accused, to make a true conclusion about his situation, which is of tactical importance and successful in his investigative actions. leads to digestion [8, p.45].

Realization of socially defined characteristics allows to know the interrelation of the accused's personal and social needs, what they seek to satisfy, such as professional development, sports, music or, alternatively, drinking or kimchi. Subsequently, it often brings illegal methods to their satisfaction. Characteristics of the defendant’s character, such as correctness of speech, lying, openness, non-discrimination, accessibility, humanity, courtesy, brutality, principality, incompetence, overconfidence, self-exaltation, frustration, chaos, selfishness. Identifying and using them can be crucial to the success of investigative efforts. Obviously, dealing with such feelings should not draw attention to the pros and cons of the accused person, even if this may be a temporary success. This is the exact opposite of the criminal justice challenge.

Defendant's overall level of development, such as his or her ability to read, experience. information about skills, skills, habits and so on will be important in gathering tactical tactics. For example, it is not possible to implement a number of procedural rules without taking into account the examples of films and movies, which are badly damaged by the emotional scale of the educated person. These include, for example, the choice of remedies, the exercise of protection rights. Determining the feasibility of forensic psychiatry or forensic psychology examination is like obtaining information that is of evidence importance.

According to Article 238 of the Criminal Procedure Code of the Republic of Uzbekistan, the investigator or prosecutor takes into account a number of circumstances, such as the severity of the charge, the identity of the accused, his age, health, marital status, and so on.The right choice of precautions depends on a number of situations. The most important of these are the data that characterize the accused, such as the place of residence, previous convictions, as well as testimonials from the place of residence and employment. When choosing a custodial measure, special attention should be paid to the identity of the accused. This requirement stems from Article 236 of the Criminal Procedure Code of the Republic of Uzbekistan.

There are known cases of arbitrary arrest without formalizing the person's information, based on the classification of the offense, which is punishable by imprisonment and, on the contrary, sometimes refuse to apply such a measure. As a result, some defendants remain in jail, avoid trial and prosecution, interfere with actual criminal proceedings, and commit new

crimes. Investigation and protection of the psychological characteristics of the accused also requires articles of the Criminal Procedure Code of the Republic of Uzbekistan on non-custodial measures. Information on the personality of the defendant is also necessary for the exercise of his / her rights. The law not only guarantees the defendant's right to defend, but often establishes the presence of a defense lawyer (Article 51 of the Criminal Procedure Code of the Republic of Uzbekistan). In this case, the presence of defense in the preliminary investigation is largely dependent on the information that characterizes the accused person.

Facts that are or may be manifested in a committed crime, such as aggression, greed, jealousy, or crime, allow us to determine whether it was acting on the basis of those motives or other circumstances. At the same time, information about the emotional traits of the accused is also at stake.

Defining the emotional state of the accused at the time of the crime is necessary to characterize the crime. It may be due to the intense excitement caused by the blue, manifested as a physiological effect. When examining the psychological characteristics of the accused, the investigator may discover that he or she has a high sensitivity, excessive sensitivity, anger and a sense of self-worth, negative self-esteem, and others. This will help the investigator to understand the emotional state of the accused, especially if the victim has committed a criminal act in which he or she has committed a criminal act. All of this is the basis for the appointment of forensic science expertise.

The psychological characteristics of the accused are also seen as influences on the nature and extent of his responsibility. It was mentioned earlier that they are either recognized as aggravating or mitigating. Criminal offenses with the use of criminal or other social circumstances, emergency or mass disorder, etc. are punishable by law, except for the cases of aggravated or otherwise intentional crime, except aggravating punishment. calculated. The fact that an organized group has committed a crime shows that the members of the group have strong, nonviolent views, their strength, and their willingness to commit a crime. Also, hate crimes and other misconduct are manifested by the deep and persistent disposition of certain societal attitudes, the desire to satisfy their own desires and needs, albeit in ways that are violated by society and the law.

In order to understand the manifestations of cruelty and abuse, it is necessary to identify the psychological characteristics of the accused, such as his / her attitude to other people, emotional responsiveness, retaliation, anger, hostility, and other traits.

In most cases, mitigating circumstances are related to the personality of the accused. Not only because of severe personal family or other circumstances mentioned above, but also because of rape or severe mental disorder caused by violence, aggression or other unlawful acts committed by the victim as a result of material, service or other dependence. enter. Here it is important to feel sorry for what you have done, to plead guilty, and to actively help you to solve the crime.

In addition to personal and family-friendly circumstances, a situation arises whereby the public, which is typical of the defendant, cannot be represented in the ordinary circumstances. In some cases, non-social attitudes are the result of inability to resist them or fear of deteriorating their material, service or other position.

The investigation and registration of the accused's psychological characteristics are contained in many articles of the Criminal Code of the Republic of Uzbekistan. Circumstances that directly relate to the defendant's personality, however, may be due to the fact that his ability to think is slow and his ability to understand simple situations is such. In these cases, the investigator relies on the forensic psychiatric expertise's findings and draws conclusions.

According to Article 115 of the Criminal Code of the Republic of Uzbekistan, it is not possible to question a person who is not capable of correctly comprehending and giving testimony about the situation that is important to him because of his mental or physical disadvantage. According to Article 24 of the Criminal Code of the Republic of Uzbekistan, if the person who committed a crime did not understand, understand and should not be aware of the socially dangerous nature of the act, or was not aware of the socially dangerous consequences of the crime, shall be recognized as committed. Article 18 of the Criminal Code of the Republic of Uzbekistan recognizes the socially dangerous nature of its conduct at the time of committing a crime and manages its actions. A person who is mentally retarded at the time of committing a socially dangerous act, such as chronic psychiatric disorder, vaccine disorder, weakness or other mental illness, cannot be held responsible for his or her actions.

When the investigator examines the defendant's mental attitude to the offense at the time of the mistake, he discovers that it was a mistake or a misdemeanor. (Article 20 of the Criminal Code of the Republic of Uzbekistan). To this extent, he is aware of the social danger of his guilt. In investigating the identity of the accused, the investigator must seek to identify the motives and motives of the crime, including the accused. In some cases, they show that the defendant is at a high level of social danger, and in some cases, he alleviates his guilt. Already, Article 55 of the Criminal Code of the Republic of Uzbekistan enumerates mitigating circumstances, while Article 56 of the Code envisages aggravating circumstances.

The study of the psychological characteristics of the person to understand the causes and purposes of their criminal characteristics, and to identify them

clearly; characterization, their level of social danger, and the role of each group in the commission of crime. For example, the criminal investigation into several robberies and robberies by an adult and a minority group reveals that the motives of the gang members for crime are different: they all have access to roads and property. others want to show their courage and the third. If they refuse to commit a crime, they fear three. Thus, understanding the true motives and intentions of a crime will not only give an opportunity to better understand the defendant's identity but also help him to better understand his actions [9].

The knowledge of the defendant's personality, lifestyle and circumstances, orientation, character, and qualities in the conduct of psychological research should be based on the motivation to investigate the personality of the accused; There is no formal limit to the investigation of the individual, but the more the investigator knows about the psychological characteristics of the accused, the better the investigative tactics are. It is important to note that procedural information may not be sufficient to resolve tactical evidence, which means that the investigator should be more aware of the information presented in the investigation of the accused.

It is often the case that some information is not of procedural importance but is tactically important. For example, the investigator is aware of the courage of the accused. During his interrogation, Beijing tries to avoid any evidence of crime without giving concrete evidence. The question of how he might explain why he is a gentle man and a coward and a coward might lead to the fact that the defendant begins to give legal testimony or is not aware of the legality or guilt of the accused.

M.G. Korshik and S.S. Stepichev's inquiry into the identity of the interrogator - population data, information describing the social status of the defendant (occupation, workplace, internship, education, etc.), information on life conditions (family, material and working conditions, etc.), health, life. provides information about the style, the scope and behavior of the acquaintance, its moral and intellectual qualities, and its characteristics. However, in published studies on the accused person, some authors (NT Vedernikov, IS Loykina and others) propose a different set of data that constitutes the content of such a study. Such a set of defendants' personal data provides the use of sources of procedural and non-procedural information. The source of procedural information includes all the documents of the investigated case (witnesses, victim, defendant's testimony, expert opinion, physical evidence, protocols of investigative actions, etc.) with information on the subject of the criminal case. Non-professional sources include information from their operational search activities, various material and documents that might not have been unexpected in the case.

The interrogation of the interviewer, proposed by proceduralists and expert psychologists, is to some extent useful to the investigator. At the same time, it is useful for the investigator to know the mental state of the person before, during and after the crime. What attention is being given to this issue of practice. In addition to these methods expert considers it necessary to use punitive methods, witnesses, and questionnaires in community studies [10, p.454].

N.I. Porubov focuses on the scientific basis of questioning during the preliminary inquiry, and outlines the observations, interviews, productive activities and independent descriptions that can be used in the case study. N.I. Porubov, like A.V.Mochromuhite living conditions, such as tulips, are not specifically intertwined with biographical methods that explain the importance of education and training in the formation of individuals. It is necessary to cover the methods of observation, experimentation, questioning and interviewing in the development of personal study programs.

In biographical research, much more detailed research has been developed as a tool for the study of personality. In particular, it is necessary to study the legal personality with special biographical questionnaires. Family, heredity, life and upbringing conditions, habits (drugs, alcohol, smoking) of the person under study. Hobbies and hobbies (gambling, etc.), behavior in the family, at work, in the military, in relation to the police and criminal elements, and the relationship between relatives and acquaintances have aroused great interest. The short scheme or plans are given in the other textbooks on forensic science, as well as in interrogation works.

Conclusion

The investigation of various crimes has led to the need for a comprehensive study of criminals, not just who is the criminal, but also about the psychological breakdown of the person, their interactions with the subdivisions and their role in human behavior. Based on the correct scientific understanding of the mentioned issues and research methods, they help to identify who is the person who committed the crime: The Murderer, the perpetrator, the false witness, the perpetrator, the hooligans and the psychologist brochures for learning are now available.

Many of the works contain specific characteristics and characteristics of the defendant's psychological, dignity, conformism, and so forth. There are numerous works devoted to the study of the psychological characteristics of juvenile offenders.

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ON SOME PECULIARITIES OF POLITICAL DISCOURSE: REVIEW

Abstract: *The following paper claims that the contextual orientation in the identification of political discourse removes the most complex issues related to the lexical and grammatical features of political discourse. Political discourse is regarded as a speech activity of political entities in the field of their institutional communication. Distinctive features of political discourse are institutionality, conventionality, ideology and intertextuality. It also deals with the lexical layer, which is the most sensitive to changes in society. The process of transforming the lexical space in a language is almost continuous, which proves the close connection of the linguistic system with other areas of public life – political, state, socio-economic, etc. Since the more intense changes in politics, the more significant the changes in vocabulary at each stage of its development.*

Key words: *socio-political discourse, political vocabulary, political text.*

Language: *English*

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Introduction

The ontology of research on political discourse urges to deal with the problem of differentiating political discourse with respect to other types of discourse (legal, pedagogical, advertising, military, etc.). Political discourse is a phenomenon that has much greater frequency of manifestation in society in comparison with other types of discourses. In this regard, the phenomenon of political discourse does not have an unambiguous definition, since the category of *policy* itself currently does not have a clear definition, and secondly, the allocation of political discourse in the aggregate of linguistic features is not possible.

In political science, politics is defined as a set of certain actions aimed at distributing power and economic resources in the country [10; 371]. This official level of politics includes the media, the education system and all those social institutions that control the phenomena.

Webster defines politics as following:

a: the art or science of government

b: the art or science concerned with guiding or influencing governmental policy

c: the art or science concerned with winning and holding control over a government

The following research deals with the term "politics" as the activity of state bodies, associations of citizens and individuals, relations between states, nations, large groups of people, which is aimed at realizing, upholding one's interests and associated with the desire to the conquest and use of power.

Political communication is "any communication that affects the distribution and use of power in society, especially if these messages come from official government institutions" [5; 311].

Procedure as a Distinctive Sign of Political Discourse is a determining factor for highlighting political discourse as "a form of political action, part of the political process" [6; 224].

According to A. N. Baranov and E. G. Kazakevich, who believe that political discourse forms "the totality of all speech acts used in political discussions, as well as public policy rules illuminated by tradition and verified by experience ..." [8; 6].

From semiotic viewpoint, political discourse is defined as a kind of sign system in which the semantics and functions of different types of language units and standard speech actions are modified [15; 3]. Political discourse is interpreted as institutional communication, which, unlike the personality-oriented one, uses a certain system, expressed by the

formula “discourse = sublanguage + text + context” [15; 15]. Target dominant has become decisive in considering political discourse as a “set of political discussions of society: authorities discourse, counter-discursion of public rhetoric, fixing the system of public relations or destabilizing it.

Literature Review

The sources for studying political vocabulary are associated with the activities of American writers of journalists and sociologists W. Lippmann, P. Lazarsfeld, G. Lasswell, N. Leites. Later, in his monograph “Language in Politics: Studies in Quantitative Semantics”, G. Lasswell and his colleagues identified various interdependencies between the semantics of linguistic units, their frequency and political processes.

In 1948, D. Orwell wrote a dystopian novel in which the principle of “doublethink” an d the dictionary of “newspeak”, i.e. how to manipulate human consciousness through vocabulary in order to gain and maintain political power in a totalitarian state.

In 1946, J. Orwell published the famous article “Politics and the English Language”, which can be attributed to the first experiments in the study of the English political vocabulary. J. Orwell drew attention to the fact that in political discourses such words as *democracy, socialism, freedom, patriotic, realistic, justice* do not have a definite meaning, and attempts to give them an unambiguous definition meet resistance among politicians. For example, the word *democracy* has only a universal evaluative characteristic, since in the listener's cognition this word reproduces a positive connotation. J.Orwell was one of the first to point out the widespread prevalence of certain words in the political communication of various states.

Following the West, after the Second World War, Russian scientists began to study the aspect of speech and vocabulary of the presidents. The reasons for the persuasiveness of presidential speeches were searched in phonetic and grammatical features, wit, simplicity, imagery and other qualities of speech.

There are assumptions of the special position of the grammatical political language, such as, for example, the tendency to eliminate the category of person [11; 1994], the inclusive use of personal pronouns *we, our*. However, we think that these grammatical features, unlike special vocabulary, are not traits inherent exclusively in political discourse, these forms and constructions are used in other types of communication (with a difference in frequency and pragmatic orientation).

The presence of general cognitive patterns of despecialization of political terms in political discourse enable its understanding in practice by all members of the language community. The widespread despecialization of political terms is that political communication, like no other domain of public relations, is aimed at the mass consumer (addressee). On the other hand, the language of expression of relations of power in official discourse is a “strong language”, which indicates a rather high status of the speaker, satisfying the requirement of his/her positional role. Such a text testifies to the speaker's increased attention to linguistic expressiveness and the design of his/her message. Political oratorical speech also belongs to the category of such texts.

Some works suggest that the language of politics has a specific content, not a form. Formally, the language of politics is distinguished by only a small number of canonized expressions and clichés. P. Serio highlights the hypertrophied tendency to nominalization and composition as the grammatical features of Soviet political discourse [4; 1985]. He defines the Soviet political discourse as “a special use of the language to express a special mentality, ideology”.

As to T.A. van Dijk [1; 2001] there are possible stylistic, thematic and interactive markers that contribute to the identification of the distinction signs of political discourse; it does not seem possible to create any typology of political discourse based on only verbal properties. T.A. Van Dijk concludes that the fundamental category for highlighting political discourse is context, not the text itself.

Following this logic, T.A. van Dijk [1999a] characterizes political discourse as a combination of genres of the social domain of politics and contrasts it with educational discourse, media discourse, and legal discourse. At the same time, it is emphasized that the policy domain has rather vague boundaries, since the term "policy" is interpreted differently in different sources [1; 2001].

There are several works on the study of political lexis in the Uzbek language. Researchers mainly studied Turkology in comparison with Russian studies. Peculiarities of the vocabulary of socio-political strata in the Turkic languages appeared only at the end of the XX century.

Kh.A. Dadabaev in the monographic study “Socio-political and socio-economic terminology in Turkic written monuments of the XI-XIV centuries” (1991) analyzes the lexical-semantic group of socio-political terminology associated with the administrative-political state, activities of the foreign policy, social structures in the ancient Turkic scriptures. The author gives a historical and etymological analysis of the considered vocabulary. This work is considered the first monographic study in the framework of PL in the language of awareness of the Uzbek language.

In the monograph “Comparative historical grammar of Turkic languages. Vocabulary” (1997) explores the socio-political terms that have a common Turkic character.

In her PhD work A.Kh. Turakhozhaeva (2012) studies the language development system of political

lexis in the period of independence of the Republic of Uzbekistan. The researcher notes the subject of the study to be an open system which is subject to changes [3].

A number of works have been done by the Uzbek scientist E.D.Muratova, in which she demonstrates several techniques and methods to improve the quality of translation of political lexis.

A.D. Urazbaev's (2010) work is dedicated to the historical political lexis of the Uzbek language, where the author analyzes and generalizes the political lexis. A.D. Urazbaev gives a typology of political lexis on a thematic-semantic basis, analyzes the linguistic and extralinguistic factors of the vocabulary, methods of enrichment and development in synchronous and diachronous aspects [14].

A.A. Abdullaeva (2005) studies a diplomatic and foreign policy vocabulary in a comparable aspect in her thesis "Vocabulary of international relations sphere (based on the Russian and Uzbek languages)". The researcher studies the similarities and differences of the foreign policy terms in different languages, touches on the problems of the Uzbek terms in the fields of international relations. The study deals with regulatory and international documents for 1992-2002 [7].

Z.M. Isakova studies the composition of the political lexis using linguistic analysis in the framework of the work of Alisher Navoi "Majalis al-nafais" (Collection of the refined)" (2010). She divides this layer into groups and reveals some phrases based on genetic analysis and which were not included in the dictionary of works by A. Navai. She reveals the frequency of political lexis of this period.

Conclusion

Political lexis is an element of socio-political discourse; its peculiarity stems from the goals of political activity, in particular "the popularization of the ideal and practical dimension of the so-called *common interest*." Understanding the common interest, in turn, is associated with the value system of a particular society. The target sign of a political text is the purpose for influencing society through the propaganda of certain ideas, emotional influence on citizens of the country and their incitement to political actions. The content of a political text determines the use of a special group of words – the socio-political vocabulary (political phraseology, metaphor, terms, etc.). Based on the foregoing, in our opinion, the PL is loaded with cultural information, as it is used as an argument of persuasion.

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CRIMINAL LAW IN UZBEKISTAN IN THE MIDDLE OF 19th CENTURY AND 90s of 20th CENTURY

Abstract: *This article illuminated criminal law in Uzbekistan in the middle of 19th century and 90s of 20thcentury by the helping historical literatures and juridical documents. Besides, it gives more information that cases were limited, mainly civil cases, and criminal cases saw minor offenses, such as minor theft, insult, and minor bodily harm as well.*

Key words: *criminal law, Uzbekistan, Turkestan, Central Asia, Kokand khanate, Bukhara emirate, occupation, independent.*

Language: *English*

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Introduction

Prior to the occupation of Central Asia by Russia, there were three independent states in this region: the Bukhara Emirate, Kokand and Khiva khanates. Each of these states is an independent state and they have followed Shari'a laws in these countries. Due to the Russian invasion, the Kokand Khanate was completely abolished and the Turkestan General Governorate was established based on military rule [1, p.3]. Hence, the territory of the Kokand Khanate was annexed to Russia as the governor of the Russian Empire. Although the Bukhara Emirate and the Khiva khanate lost their independence, they were officially retained and transformed into a Russian colony.

Following the Russian occupation of Central Asia by the experience of world colonial policy and retaining the people's fervor against itself, he maintained local laws and judges. Judges acted in accordance with Sharia law. Their cases were limited, mainly civil cases, and criminal cases saw minor offenses, such as minor theft, insult, and minor bodily harm.

In 1865 a "temporary regulation on the administration of the Turkestan region" was adopted, and according to the charter all administrative agencies and courts in Turkestan were subordinated to the Turkestan military governor. All crimes, except minor crimes, were tried in the courts of the Tsarist government or in the military courts, and the criminal law of Tsarist Russia began to be resolved.

Tsarist Russia, to some extent, maintained Shari'a laws in Central Asia and used it to subordinate people to the Shari'a colonial authorities and agencies. In particular, to apply the Shariah law widely regarding the collection of state taxes.

METHODS

In Turkestan, where the Kazakhs and the Kirghiz people lived, a Judges' Court was established under the Charter of 1867- 1868. Judges have limited rights to prosecute, and they operate according to custom. According to the aforementioned Charter, the Judges have seen offenses against individuals, property crimes (family robbery and extortion), and crimes against the Muslim religion.All other crimes were resolved under the criminal law of the Russian Empire [2, p.34].

Traditional law was not declared by law, but consisted of oral, inherited procedures. Even after the October 1917 coup, the judges and judges were temporarily saved.The Bukhara emirate and the

Khorezm khanate were abolished in 1920 due to the invasion of the new Soviet state and the Bukhara and Khorezm People's Republics were established under Soviet rule.

After the October Revolution, part of Central Asia directly into Russia as Turkestan province was part of RSFSR as Turkestan Autonomous Republic. by special decision of the Central Executive Committee of the Autonomous Republic and Council of People's Commissars in the territory of the Autonomous Republic or directly This was a remarkably Republic [2, p.26]. In December 1919, the RSFSR issued a major reference to criminal law. The main guideline contained only the provisions of the General Part of Criminal Law. The main manual was published on April 20, 1920 under the title "RSFSR Basic Guidelines on Criminal Law of Turkestan Autonomous Republic". This basic guide was the first criminal law.

On May 24, 1922, the Criminal Code of the RSFSR was adopted, and on July 21, 1922 the Central Executive Committee of Turkestan adopted the Code on its implementation in the Republic of Turkestan. This code has been introduced in the territory of the Bukhara and Khorezm People's Republics [3, pp. 405-406].

The USSR was established in 1924, and Uzbekistan as a union republic became a part of the USSR. After the establishment of the USSR on October 31, 1924, the "Basic Rules of Criminal Law of the USSR and the Union Republics" were adopted, which outlined the important provisions of the General Criminal Law Section The Basic Law was the law of the Commonwealth.

On June 26, 1926 the first Criminal Code of the Uzbek Soviet Socialist Republic was adopted and entered into force on July 1, 1926. (This codex was valid at the same time in the Tajik ASSR). This Criminal Code consists of the General and the Special Part, the General part consists of four sections and the Special part consists of ten chapters. This Code was adopted in accordance with the General Law of the USSR and the Criminal Laws of the Union Republics, adopted on October 31, 1924 [4].

The first section of the Code specifies the scope of criminal law, that is, liability of citizens of the USSR and foreign citizens for crimes committed in the territory of Uzbekistan. cases excluding criminality, terms of prosecution, failure to appear in court and other norms.

The third section deals with measures of judicial correction of offenders, measures of medical and medical pedagogical character, mitigating and aggravating circumstances. Section Four provides for pre-term exemption from social protection measures. The Special Part of the Code consists of the following sections:

1. Criminals against the state (counter-revolutionary and non-discriminatory);
2. Military crimes;
3. Crimes of officialness;
4. Crimes in violation of state religion separation laws;
5. Economic crimes
6. Crimes against the life, health, liberty and honor of the person;
7. Property crimes;
8. Violation of public health, public safety, and family rules;
9. Domestic crimes;
10. Water crimes.

The RSFSR Criminal Code, enacted in 1922, remained in force in Uzbekistan until 1926, when the Criminal Code of Uzbekistan was enacted [5].

This criminal code of Uzbekistan was in force until January 1, 1960. This criminal code is aimed primarily at protecting the state, the existing state system, and against that class class enemies. The second part of the General Part of the Code provides for the possibility of criminal prosecution by analogy rules. According to the analogy rule, a defendant could be held responsible for a certain article of the criminal code, which was considered socially dangerous for the time but was not punishable by the criminal code [6].

By the end of the 1950s, the Soviet state entered a new phase of development, at that time, as a whole, the Tululators (class owners) were completely eliminated, and the members of the society were peasants, intellectuals, and laborers. Accordingly, with the need to revise laws, including criminal ones, on December 25, 1958, three laws were adopted, all-Union criminal law. These are:

1. Fundamentals of Crime I of the USSR and the Union Republics:
2. Law on Criminal Liability for Crimes Against the State;
3. Criminal Liability for War Crimes the law.

"The Union of the USSR and the Allied Republics are the basis of the criminal law" of the General Part of the Criminal Law, which all the Union republics had to develop and adopt according to their Criminal Code. The Commonwealth, which establishes liability for state and war crimes, has to be incorporated into the Criminal Code of the Union Republics without any changes to its laws. In addition, the Allied Republic was not entitled to make amendments and additions to the law. It was. These include, for example, the Decree of February 20, 1962 "On Strengthening Criminal Liability for Rape," the Decree of February 20, 1962 "On Enhancing Criminal Liability for Bribery," others If the article of the Criminal Code of the Union Republic was brought into compliance with that decree, that article could be changed only on the basis of an alliance act. From the above, it is clear that although the former USSR was officially a federal state [8, p.23], it was actually ruled as a unitary state. Every Soviet citizen, whether a

Finnish living in Karelia or a Russian in Moscow, a Chukotka chuk or Turkmen Turkmen, a Belarusian, an Uzbek, or a Belarusian living in Uzbekistan, regardless of their language, religion, customs, traditions, historical background. and regardless of the characteristics of the communist builder, it must have the characteristics set out in the code of ethics of the communist builder.

RESULTS AND DISCUSSIONS

On May 21, 1959 the new Criminal Code of Uzbekistan was adopted and entered into force on January 1, 1960. The general part of this consists of four sections, the first one contains the general rules of criminal law, the second section contains the norms on the crime, the third part on the punishment, the fourth section on the imposition and release of punishment.

The special part consists of eleven chapters: Chapter 1 - crimes against the state;

Chapter II - crimes against life, health, liberty and dignity of an individual;

Chapter Three Crimes Against Socialist Property; Chapter 4 Crimes against private property of citizens; crimes against political and labor rights of citizens;

Chapter Six - Offenses of Officials; crimes against justice; economic crimes [7];

crimes against the administrative order;

crimes against public order and public security;

Chapter eleven consisted of military crimes.

This JK remained in force until April 1, 1995. If the analogue of the JV of Uzbekistan adopted in 1926 was used in analogy with the PC adopted on May 21, 1959, the analogy was completely abandoned [8].

The reason for the crime was due to the fact that in the former Soviet times humanity was divided into the opposite classes, based on Marxism.

With the development of socialist social relations in socialism, the theory was that 'society's members are becoming more mature and, as a result, crime is decreasing. The JK, adopted in 1959, developed in this context. In fact, without the formation of socialist social relations in the former Soviet Union, the system of administrative command was dominated by society. Under these conditions, crime has not diminished, socialist social relations have not developed. The crisis of society was deepening. If the formation of the class of proprietors in the current system of market economy was openly declared and is a legal phenomenon in the society at that time, such a situation would have been hidden and constituted a crime. Even the centuries-old economic relations between people - the lawfulness of individuals in commerce, commercial activities by individuals [10]. The prohibition itself would give rise to criminality. The system of governance and economic management at that time caused the rise in economic crimes of official crimes.

The senior Russian criminologist according to Luneev, in the 60s of the 20th century, crimes committed in the former Soviet Union were 40-45%, in 1989 this figure increased to 70% [4, p.94].

The existing system of governance at that time was unable to stop the growth of crime. As a result, an attempt was made to stop the growth of crime through criminal law. During the period from 1961 to 1991, more than 350 additions and changes were made to the Criminal Code of Uzbekistan. But as the crisis of society grew deeper, the Soviet state ended its life in 1991, formerly; Uzbekistan was one of the first Soviet republics to declare independence. Uzbekistan has embarked on a path toward building a democratic democratic society based on the market economy.

CONCLUSION

Development and adoption of new laws of independent Uzbekistan has begun. The adoption of the Constitution of the Republic of Uzbekistan on December 8, 1992 provided the perfect environment for the development and adoption of all types of laws, including the new Criminal Code. On September 22, 1994, the first of independent Uzbekistan was adopted and put into operation on 1 April 1995. In summary, after 127 years of dependence the Criminal Code of the Republic of Uzbekistan was first adopted.

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THE REFLECTION OF THE ISLAMIC IDEAS IN THE LITERATURE

Abstract: *The article is devoted to the scientific analysis of religious-artistic literature and its stages of development, improvement and hagiographic character, didactic character, as well as the influence of works on the national narratives, their essence and educational significance.*

Key words: *literature, story, hagiography, plot, story, folklore, reality, hero, image, narration, war, idea, history, fiction.*

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Introduction

The most important task of the society in Uzbekistan is to strengthen and develop the nation's spiritual essence. "One of the most important tasks of our state policy is to preserve, to study and to pass to the future generations the historical heritage."[1] Hence, "even there is a page of manuscript related to our history, culture, religion it is important to collect them in order to enlighten our nation, youngsters and in order to show how great and unique heritage we have and to nurture our younger generation in the spirit of great honor to this great heritage we have."[2] In this way, to study and research present situation of the literature on the Islamic history on religious themes is an important factor on the way to the developing the nation's spiritual enlightenment. That way, to study and enlighten its educational aspects of the available literature in Uzbek language is an important task especially at present time.

It is well known that the Islam, which was spread in the Mawarannahr territories, in one way played cultural-educational role in the cherishing the nation, helping to form its literal thinking and influencing its spiritual life. In our country this case gave a rise to the literature in the religious themes and gave chance to compose such literature without mentioning their authorship. In this way literature in the religious themes can be counted that include Islamic ideas, principles, norms, notions and ideas that depicted in a novel style and they have their own role in a Turkic literature as well. While creating such narratives in that level there was certain conditions, of course. For instance, hagiographic narratives, which was created in Arab literature, played primary role.

Initially, hagiographic narratives were related to the life (*sirah*) of the Prophet Muhammad (S.A.W.). Particularly, information of the *sahabah* about the Prophet, wisdoms and the hagiographic narrative of the Ibn Ishaq and Ibn Hisham "*Siyrah an-Nabawi*" of the late VIII and early IX century can be count as primary narratives[3]. Moreover, there are some literature on the life and military campaign of the Muhammad (S.A.W.) we can exemplify books such as "The book on the conquering the countries", "the Book of Military Campaigns" ("Kitaab al-Maghazi"). By the influence of these manuscripts later in X-XII

[1] Шавкат Мирзиёевнинг ИҲТ Ташқи ишлар вазирлар кенгашининг 43-сессиясида "Таълим ва маърифат — тинчлик ва бунёдкорлик сари йўл" мавзусида сўзлаган нутқи. 2016 йил 18-19 октябрь

[2] Ўзбекистон Республикаси Президенти Шавкат Мирзиёевнинг "Ижтимоий барқарорликни таъминлаш, муқаддас динимизнинг софлигини асраш – давр талаби" мавзусидаги анжуманда сўзлаган нутқи, 2019 й 15 июнь. Uza.uz

[3] Беляев Е.А. Арабы, ислам и арабский халифат в раннем средневековье, – М.: Наука, 1960. – С. 86-87.

centuries, many hagiographic narrations in Turkic and Persian languages had been written[4]. In particular, persons who served well to spread Islamic ideas were Kulafah Al-Rashidieen, hazrat Ali and literature on his life and biography, Abdukhaliq Ghijduvani, Khoja Bahouddin Naqshband, Yusuf Hamadiniy and many other *shuyukh*, saints, mutasawwifs, poets' works are among them. In this aspect, literature dedicated to the Islamic ideas are developed in two directions:

Firstly, historical persons – historic military novels that dedicated to and about the life, work and heroism of the Prophet and the *sahabah*: Nosiruddin Rabghuzi "Qissa Rabghuzi" (XIV century), "Qissatul Anbiya" etc.

Secondly, *shuyukh*, saints, mutasawwifs, poets works and their depicted biblio-biographs, maqamah and tasawwufi genre novels. For instance, works of Abul Muhsin Bakir (XIV century), "Maqamati Bahauddin Naqshband" (XIV century), Abulhaykhoja (XV century), "Maqamati Khoja Ubaydullah Ahrar", Fakhriddin Ali Sayfi's "Rashahat ayn al-hayat" (XIV century) etc. In both versions of this religious context, the didactic character is strong. Even though these works preserved the historical information, upon a passage of time historical figures such as sheikhs, saints, poet life and work became *riwayah* and myths. Historical reality is combined with artistic textures, and the plot created interesting narrations. Historical figures have been promoted as a legendary image that symbolizes the people's aspirations and ideals. This process resulted in creation the range of folklore (or stories) books or mystical and martial arts books.

"Consequently, Uzbek folklore literature has plenty of books that promote Islamic ideas and bookworms read most of them at the organized special evenings"[5].

In this respect, literature on Islamic ideas is primarily are the works of hagiographic origin that combines genre of adventure and adventure in scientific research[6]. These are the peculiarities of these literatures:

1) Artistic depiction of historical reality and exaggeration of ideological foundations;

2) Adding fiction figure and enhancing the aesthetic value of the work;

3) Providing religious character on national event and situations that are not related to Islamic values;

4) The description of national conditions and traditions in a religious way;

5) Instilling religious ideas into the minds of the people[7].

Moreover, literature on Islamic ideas has two objectives: first, to instill the ideas of Islamic in the minds of ordinary people; Secondly, the idealization of the image of religious leaders in the minds of people. Intelligent and purposeful novelists made this effort. It is interesting to note that the names of the authors of folk books were considered as a secondary in the given work, and the public naturally accepted this[8].

The literature on Islamic ideas came into existence in Mavarannahr in the late IX and early X centuries. At the head of this is the depiction of the events of Hazrat Ali and his descendants[9]. The reasons behind are as follows:

1) The measure of spiritual protection of Hazrat Ali and his descendants in Mawarannahr, the true successors of the Prophet (S.A.W.);

2) It was preferable for him to spread the ideas of Islam in a more educational way than in Ghazah.

In the narratives about Ali and his descendants, the artistic character is very strong. They have the following sorts:

- To show Hazrat Ali as an infinite strongman;
- To describe his sword - Zulfikor - as a powerful weapon that no one else can carry;
- To give him a quality of *"Sheri Hudo"*
- Explanation of the most important and interesting places of the country as a place of worship (for example, the Shohimardon shrine);
- To call his horse Duldul, as it flies like a wind;
- To increase sentiment by adding poetic colors to images[10].

Two sources are influenced, if we look carefully, first: the life of the Prophet Muhammad (peace be upon him), described in his biographies; and secondly, the national poem - the influence of the Alpomish. If we say in one word, these folk books contain the following facts:

a) To portray Ali as a just man as the Prophet (PBUH);

b) Portraying Ali as a striver for honor and faith as Alpomish;

c) Introduce the descendants of Ali into public as guards of religion and state.

As it can be seen, these traits mentioned in the popular books about Hazrat Ali have led to their popularity. The influence of Persian-Tajik literature was certainly can be traced. For example, most of the literature on the Islamic ideas are translations.

It is well known that in the former Soviet Union Uzbek literature studies had two approaches to religious-fiction: first, their perception of mysticism

[4] Беляев Е.А. Арабы, ислам и арабский халифат в раннем средневековье, – М.: Наука, 1960. – С.23.
[5] 1 Ҳазрат Али ҳақида қиссалар. Нашрга тайёрловчи ва сўзбоши муаллифи С. Рафъиддин. –Т:. Ёзувчи, 1992. – Б.4.
[6] Литературная новая энциклопедическая словарь. – М.: Мысль. 2003. – С.105.
[7] Ibid. See p. 106
[8] Бертельс Е.Э. Тюркская суфийская поэзия. / Вестник САГУ, 1938. – № 2. – С.45-46.
[9] Ҳазрати Али ҳақида қиссалар. – Т.: Меҳнат, 1992. – Б. 14..
[10] Ibid. See pp. 14-19

and their view of it as harmful atheistic[11]; and the second is emphasizing the peculiarities of secularism in literature on Islamic ideas[12]. The second approach was relatively right. This is because religious and secular literature combines religious and secular spirit. While the religious spirit is based on the promotion of religion, faith, and morality, the secular spirit prioritizes education, spirituality and *dawah*. This is a rare phenomenon in world literature.

During the years of independence, religious literature was traditionally published and limited to it as a source of enlightenment[13]. In addition, the literature on Islamic ideas was not seriously analyzed from the scientific point of view. In contrast, there has been considerable research in this field of literature in world literary studies[14]. In this context, Turkic-language literature on Islamic ideas should be widely studied.

Observations and analyzes show that religious literature in the Turkic language has the following stages of development:

1) In the IX-XII centuries religious and fiction literature appeared and was fed by national books.

2) IX-XIX centuries. During this period, high-quality examples of literature on Islamic ideas were created, with the preservation of fuelling from the national books, and the historical realities began to be portrayed with a high level enthusiasm.

3) In the XX century, literature on Islamic ideas has become the object of national research.

Dividing the development of literature on Islamic ideas into these stages provides a systematic study. After all, the following features are characteristics of religious literature:

a) A mixture of religious and secular content;

b) An artistic portrayal of historical reality;

c) Exaggerating characters;

d) The effective use of mythological elements;

e) Adding emotional poems to enhance aesthetic appeal.

These characteristics were the basis for the popularization of literature on Islamic ideas and their publication. The public accepted the heroes (characters) of these literatures as ideal. There are many other qualities that people have learned about right and wrong: the struggle for justice and the pursuit of the truth as well.

These features are also particular of the literature on Islamic ideas about Hazrat Ali and his descendants. During the IX-XIX centuries, this literature taught religion. Even in the books of anonymous authors, separate pages are devoted to the image of this family[15].

Therefore, the literature on Islamic ideas is notable for its distinctive features. From these points the following conclusions can be drawn:

Firstly, literature on Islamic ideas in the Turkic language was created during the IX-XIX centuries. This form of Arabic and Persian literature influenced its foundation.

Secondly, literature on Islamic ideas is characterized by a combination of religious and secular spirit, based on historical reality, poetic image and ideological-enlightenment. Extensive study of it and reaching specific conclusions are among the most pressing tasks of today.

Thirdly, a great deal of literature on Islamic ideas was created on Hazrat Ali and his descendants. The main source of this is the descendants of Hazrat Ali and the Karbala story.

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LINGVODIDACTIC FUNDAMENTALS OF TEACHING STUDENTS TERMINOLOGY IN THE FIELD OF TRANSPORTATION IN ENGLISH ON THE BASIS OF A SYSTEMATIC APPROACH

Abstract: *The article describes a number of problems related to understanding professionally oriented texts, dialogues, and other materials that are considered relevant in teaching a foreign language today, and offers suggestions for solving these problems. Lingvodidactics as a professionally oriented method, and it was proposed to create new lessons and use multimedia tools for listening and new methods of teaching.*

Key words: *Lingvodidactics, methodology, authentic video materials, teaching communicative competence.*
Language: *English*
Citation: Turobov, J. R. (2020). Lingvodidactic fundamentals of teaching students terminology in the field of transportation in English on the basis of a systematic approach. *ISJ Theoretical & Applied Science, 02 (82),* 290-292.
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Introduction

The concept of lingvodidactics and its essence

The huge changes taking place in the life of our society affect all spheres, as well as the process of Higher Education. The violation of the old forms of social relations and the emergence of a new democratic way of life demand the creative activity of the individual. By improving the education system in our republic, great confidence is given to the training of mature, competent, independent thinking, strong-willed, self-sacrificing and initiative personnel in all aspects.

Currently, interest in foreign languages has increased due to integration processes and new socio-economic, conditions of development of Russian society. New educational institutions, various courses and faculties are being established. The need to learn foreign languages dictates time. In this regard, the natural question arises about the correct Organization of the educational process in the field of teaching a foreign language, and here the methodology comes to the fore. The understanding of methodology as a theoretical and practical science is generally accepted, the subject of which is the scientific justification of educational goals and content, as well as the scientific development of the most effective methods, methods and forms of teaching, taking into account the set goals, content and specific educational conditions. The methodology of teaching foreign languages is a compulsory educational discipline in the faculties and departments of language, which trains teachers. At the same time, the lack of hands-on summarizing the accumulated internal and external experience makes the process of their language and professional training ineffective.

During the interpretation of the term lingvodidactics, the analysis of concepts that serve as the basis for the origin of its content is significant. Didactics (didacticos from the Greek language is a student of pedagogy, which determines the general theory of useful and didasco education). This word first appeared in the writings of the German teacher Wolfgang Rathke (Rathihiya) (1571-1635) to refer to the art of learning. Similarly, it is "the art of teaching universal all around", didactics and J. A. Samenius interpretation. At the beginning of the XX century, the German teacher I. F. Herbart gave didactics the status of an integral and coherent theory of the study of Education.The main task of Rathia didactics is unchanged because of the fact that there are problems of development: what to teach and how to teach it;

modern science also intensively studies the problems: when, where, to whom and why to teach.

The main categories of didactics: teaching, teaching, teaching, learning, knowledge, skills, and goal, content, organization, types, forms, methods, tools, results (products) training. Recently, the status of the main didactic categories it is proposed to define the concepts of didactic system and technology trainings. Therefore, we take a short and concise definition: didactics is the science of education and training, their goals, content, and methods, resources, organizations and the results achieved. Teaching is the orderly activity of the teacher for the implementation of educational goals (educational goals), provision of information, education, awareness of knowledge and application in practice. Training is a process that is based on (more precisely, a process that is carried out together) new forms of knowledge, exercise and experience arise from previously acquired behaviors and activities. The orderly interaction of the teaching staff with the students, aimed at achieving the goal. The process of upbringing (didactic) involves the following basic relationships interactions. Didactics as a science studies the legislation operating in the field, analyzes the linkages that determine the course of its object, and determines the results of the educational process, methods, organizational forms and tools for ensuring the implementation of planned projects goals and objectives. This allows you to perform two tasks:

- theoretical (mainly diagnostic);
- practical (normative, instrumental).

Even K. D. Ushinsky also said that we do not tell teachers they do one or several things, but we say learn the laws of processes do business, and these are the laws that act in accordance with. The process of language learning on linguistic and cultural aspects of mastering will help with a support their understanding. Linguistics, in turn, is not only a language, as a subject, but also as a means of learning, that is, a linguistic description of the language for educational purposes. In this aspect, it studies the macro and micro-languages of the textbook, the didactic speech of the teacher. The accumulated knowledge, skills and skills are the generations held in the most effective way as follows. Education and training for this purpose will serve as a planned ongoing process of strengthening people with knowledge, skills and skills.

The task of didactics is to determine the content of education of new generations, to determine their useful knowledge, skills and skills in the search for the most effective ways of arming the legalities of this process. Given the relevance of education to education, didactics can be defined as a scientific discipline about theory education, learning and perception. The subject of didactics at the present stage of development is the process of education and training, obtained as a whole: carried out in the content of Education programs and textbooks; principles, methods and tools of teaching; educational role of educational process; organizational forms of teaching.

Lingvodidactics became an independent field of interdisciplinary research in the second half of the twentieth century. The history of the formation of the term linguodidactics is reflected. The process of mastering the native language by a person , which in 1969 Shansky dictated the need to take into account the objectives associated with the development of language description problems in educational institutions, the object of how this happens, has been recognized by MAPRYAL since 1975 year, this term is international. A number of scientists left the concept of “Methodology” (N. M. Lucky, R. K. Minyar Beloruchev and others.) The use of the term lingvodidactics in the works of other scientists, the concepts “methodology” and “lingvodidactics”, they are considered synonyms and do not reduce their practical and theoretical significance. From the point of view of the relationship between linguistics and methodology, the name of the specialty is reflected in 13.00.02: “theory and methodology of education and training (Russian as a foreign language)”.

Lingvodidactics this theory requires the identification of differences in languages at the level of typology and methods, while foreign language education is a conceptual category of devices of unconventional content. Methodology is the expression of lingvodidactics as a method of practical language teaching. Lingvodidactics formulate common laws and ways of their formation on the functioning of the mechanisms of human abilities to communicate in a foreign language. Lingvodidactics is based on the philosophy of language, sociology, general language knowledge, linguistics, psychology and psycholinguistics based on the basic legalities of mastering a foreign language in educational institutions. The methodology, in turn, provides a theoretical framework for the process of teaching (teaching and learning) a foreign language and creates a foreign language teaching (or learning system) model.

A large encyclopedic Dictionary defines didactics as the theory of education and upbringing that reveals patterns as the acquisition of knowledge, skills and skills, determines the scope and structure of educational content, improves teaching methods and organizational forms. S. I. The Explanatory Dictionary of the Russian language by Ozhegov gives the following definitions. Didactics is a branch of pedagogy that studies the general theory of education and training. Methodology-a set of methods of teaching something, practical implementation. The science of teaching methodology. The term “linguodidactics” was introduced in 1969 year by academician Rao N. M. It was introduced by Shansky

and has been recognized as an international term since 1975.

Pedagogical encyclopaedia dictionary (2003) defines linguodidactics as the general theory of language learning as the study of the specificity of the laws, content and methods of language learning, the means of teaching a particular language depending on didactics, the purpose, functions and nature of the material being studied, the conditions of monolingualism (monolingualism), the stage of learning and intellektual speech development.

We present the definitions of these concepts by a number of major scholars academic Rao A. M. Novikov noted that the general theory of study, taking into account the whole set of problems of didactics, is "private didactics", that is, the theory of teaching a particular course or subject, while the goals, content, forms and methods, tools, methodology of education and training. A. S. Based on the definitions of the term proposed by akhmanova (Akhmanova 1981 y), (Grinev 1993 y), V. (Danilenko 1971 y), (Leychik 1989 y), (Nelyubin 2001 y) give an explanation to the term linguodidactics. Lingvodidactic term is one or more lexical terms units in a compound that are clearly and accurately expressed linguistics linguistic concept that is inclined to General Linguistics word formation and interaction of lexical units.

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Contents

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