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CONTENTS

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DEVELOPMENT FACTORS OF SMALL BUSINESS AND PRIVATE ENTREPRENEURSHIP.

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Annotatsiya: Ushbu maqolada respublikamizda kichik biznes va xususiy tadbirkorlikning rivojlanish tendentsiyalari va uning sanoatdagi o‘rni tahlil qilinadi. Tahlillar asosida kichik biznes va xususiy tadbirkorlikning sanoatdagi mavqeini mustahkamlash bo‘yicha takliflar ishlab chiqildi.

Kalit so'zlar. Kichik biznes, tadbirkorlik, sanoat, kichik biznesni rivojlantirish.

Аннотация: В данной статье анализируются тенденции развития малого бизнеса и частного предпринимательства в нашей республике и его роль в промышленности. На основе анализа разработаны предложения по укреплению позиций малого бизнеса и частного предпринимательства в промышленности.

Ключевые слова. Малый бизнес, предпринимательство, промышленность, развитие малого бизнеса.

Annotation: This article analyzes the development trends of small business and private entrepreneurship in our republic and its role in the industry. On the basis of the analysis, proposals were developed for strengthening the position of small business and private entrepreneurship in the industry.

Keywords. Small business, entrepreneurship, industry, small business development.

Introduction. In the conditions of the market economy, strengthening the policy of non-interference of the state in the development of small business and small enterprises is the main direction. We can see this experience in the practice of foreign small business development. In this regard, it is worth mentioning that there is a big difference in the functions of managing a small business and regulating it. Because management covers all aspects of small business.

Regulation is characteristic of some of its functions. Therefore, in this regard, this problem is equally understood among some economists and experts of our country. But, in our opinion, there is a big difference between these concepts. Because regulation itself is a management function. Therefore, based on the state's policy of supporting small business activities, we can emphasize that the state needs and is

interested in regulating the development of small business. Therefore, we consider it necessary to regulate small business in each country in institutional changes.

The methods of regulating the market mechanism by the state can be direct and indirect:

- can be represented by direct methods of state regulation of the market, for example, price formation, wages, income policy, changes in the monetary and credit system, etc.;
- the indirect method of market regulation by the state can include regulation through financial processes, money-currency relations, export promotion, taxes and subsidies.

Analysis and results. We believe that the implementation of institutional changes of the market mechanism by the state, and then their regulation, is one of the most effective ways to develop small business. Today, Uzbekistan is the most developed country among the Central Asian countries. One of the main reasons for this is the implementation of strong institutional changes since the early period of independence. A clear example of this is the fact that the state, as the main reformer, made structural changes in economic sectors, and its efforts to develop the social sphere and small business. For this, more than 60 laws, presidential decrees and government decisions were adopted within the country. During this period, one of the main aspects of institutional changes was the establishment and development of small businesses or small enterprises in the country. Because Uzbekistan had all the opportunities for this. As a result of the development of small business, first of all, employment indicators have increased, our own resources have been widely used, and the volume of exports has also increased. The share of small business in the total GDP of the republic has now exceeded 58 percent.

The development of small business with more rapid learning began in 2017. Implementation of institutional changes at the national level is a great impetus for the adoption of the "Strategy of Actions" program adopted in 2017-2021 and the "Strategy of Development" for 2022-2026 in Uzbekistan. Small business development is specifically defined in section 3 of these programs.

Laws have been adopted in the country to ensure the development of small businesses (Table 1).

Table 1

Laws that are the basis for the development of small business in Uzbekistan 1991-2021

Year/month of adoption	**Name of Laws**
February 15, 1991	Law of the Republic of Uzbekistan "On Property".

February 15, 1991	Law of the Republic of Uzbekistan "On Enterprises".
November 19, 1991	Law of the Republic of Uzbekistan "On Expropriation and Privatization".
December 21, 1995	Law of the Republic of Uzbekistan "On Promotion of Small and Private Entrepreneurship Development"
April 24,1997	Law of the Republic of Uzbekistan "On Chambers of Manufacturers and Entrepreneurs"
April 30, 1998	Law of the Republic of Uzbekistan "On Foreign Investments"
December 24, 1998	Law of the Republic of Uzbekistan "On Investment Activities"
May 25, 2000	Law of the Republic of Uzbekistan "On guarantees of freedom of entrepreneurial activity".
December 25, 2019	Law of the Republic of Uzbekistan "On Investments and Investment Activities"

Another important aspect of the institutional transformation of small business is the active participation of state bodies in this process.

As mentioned above, the socio-political role of a small business is important in determining its place in society. In this regard, during the study of the principles of small business development of political parties in Uzbekistan, it can be important in the development of proposals and conclusions regarding the development of this sector.

In particular, the Liberal-Democratic Party is directly responsible for the adoption of laws or legal-normative documents in this direction in the Oliy Majlis and the Upper House Parliament in the development of small business and entrepreneurship. The LDP charter defines the following goals directly related to small business[21]:

First goal. To create new organizations for the wider activities of entrepreneurs, businessmen and farmers united as a political force, to justify their perspective both theoretically and practically, to protect the interests of this layer of society and ensure their future. Coming to the political scene of Uzbekistan on behalf of this social class and taking its rightful place.

Taking into account that the farming movement will become the main producer of agricultural products, use all available opportunities to transform it into a strong socio-political force capable of taking responsibility for the further development of agrarian and related industries and producers, and for improving the living standards and quality of the population.

The second goal. To mobilize all the party's capabilities to develop and implement a program that meets the strategic perspectives of our country's national interests and development, based on the principles of the constitution, in cooperation with other political parties and movements.

Democracy based on the open market economy chosen by Uzbekistan, building a legal state, open a large opportunities for civil society institutions and instilling democratic values into the minds and lives of the people, first of all, the youth.

The third goal. To manage the state and to influence the views that are formed in the society, to actively participate in the implementation of the political and economic reforms, to help in solving social problems, to increase the international reputation of Uzbekistan, to maintain the peace and tranquility of the country, to actively participate in the work of strengthening inter-ethnic harmony;

- to educate young people in the spirit of the national idea, to respect their age-old and national values and traditions, to serve the Motherland with love and loyalty, to choose the path of independence under any circumstances, not to allow discrimination of the values of all nations and peoples, to take measures to fight against such attacks.

It is known that various waste materials and gases appear, especially when small businesses and small enterprises operate in production. This has a negative impact on

the environment. In this regard, small business activity also applies to the ecological party of the Oliy Majlis.

In conclusion, it can be said that institutional changes in small business depend on the country's legislature.

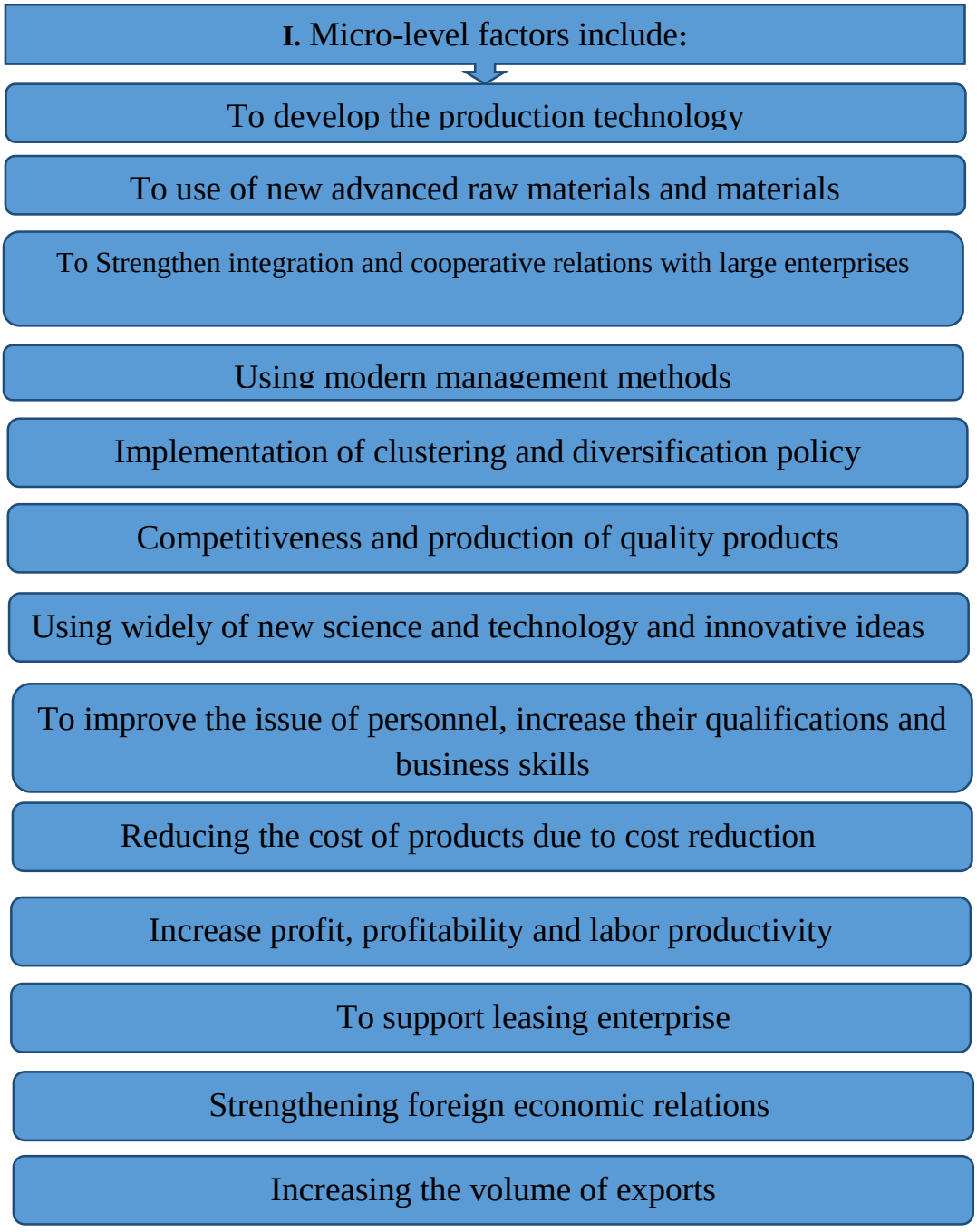

Figure 1. The system of factors affecting the development of SME

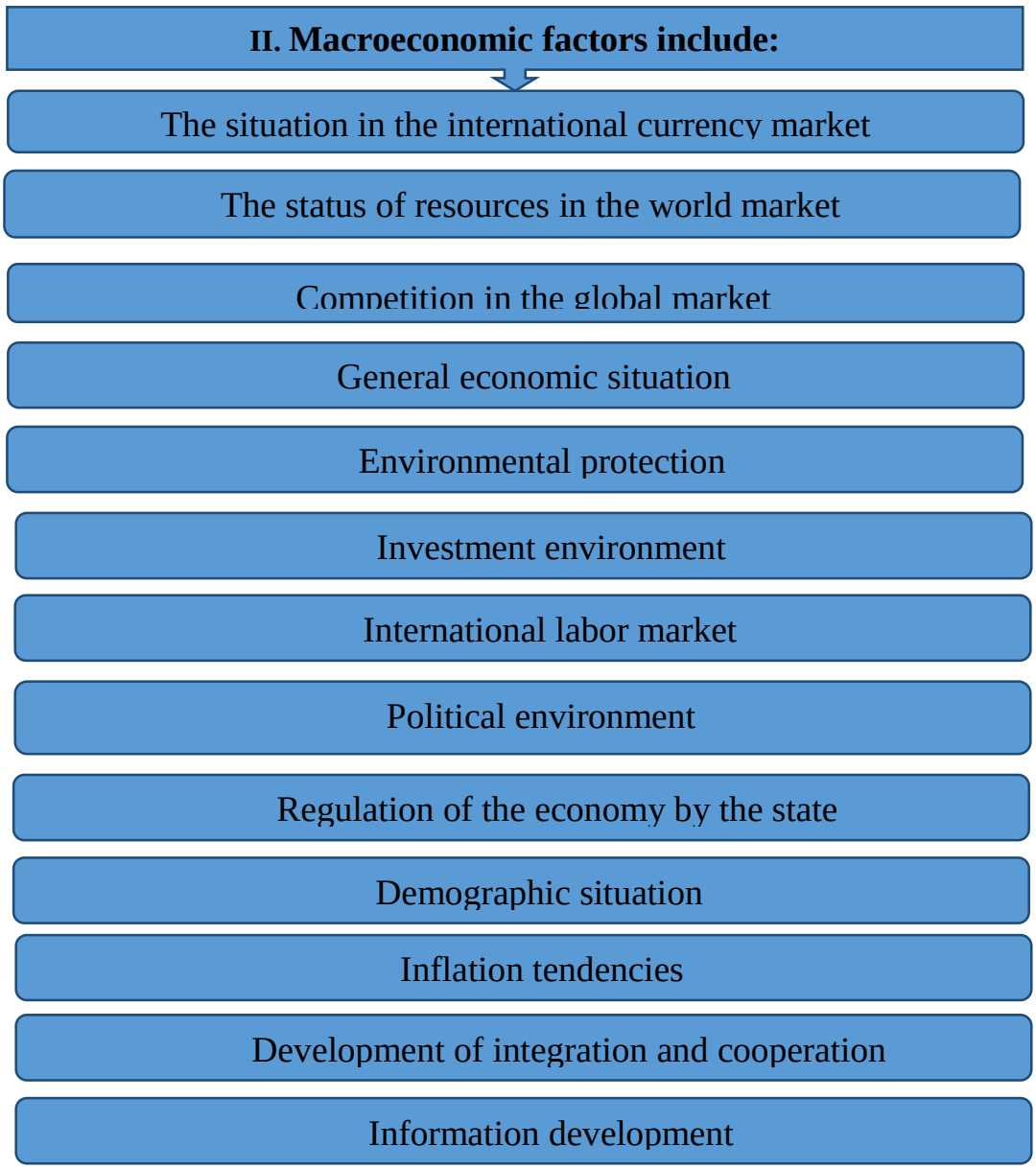

Figure 2. The system of factors affecting the development of SME

One of the unique features of Uzbekistan is the proportional development of regions. It is known that this situation is a process left over from the former union. Because at that time attention to this problem was very low.

Because of the independence, it is given a big attention to the socio-economic development of the regions. Currently, small business and entrepreneurship are developing rapidly in every region of our country.

In general, it is important to develop a strategy for the development of small business and private entrepreneurship. For this, first of all, the formation of a system of factors affecting them is one of the main results of institutional changes.

Conclusion, institutional changes have a profound effect on the development of small businesses. At the same time, it plays an important role in increasing the contribution of small business in each country and increasing its significant socio-economic potential.

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THE DEVELOPMENT OF THE HYDROCARBON SECTOR OF ECONOMY IN UZBEKISTAN AFTER INDEPENDENCE

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Annotatsiya. Ushbu tadqiqot O‘zbekiston davlat gaz va neft korxonalarining so‘nggi o‘ttiz yillikdagi siyosiy o‘zgarishlarining oqibatlarini o‘rganishga qaratilgan. O‘tgan o‘ttiz yillikda O‘zbekiston hukumati neft va gaz sohasida beshta muhim islohotlarni amalga oshirdi. Har bir jarayonda davlat “O‘zbekneftgaz” aksiyadorlik jamiyatini shaffof qilish, korrupsiyaga chek qo‘yishni va korxonalarda korporative boshqaruvni qo`llashni maqsad qilgan.

**Kalit so`zlar**: Neft va gaz sohasi, O`zbekneftgaz, mahsulot taqsimotiga oid bitimlar, investitsiya, infrastruktura, iqtisodiy siyosat.

Аннотация. Это исследование направлено на изучение последствий политической трансформации государственных предприятий газовой и нефтяной промышленности Узбекистана за последние три десятилетия. За последние три десятилетия правительство Узбекистана провело пять существенных реформ в сфере углеводородного сектора. В каждом вызове государство явно намеревалось сделать «Узбекнефтегаз» прозрачным, остановить коррупцию и внедрение корпоративного управления в компаниях.

Ключевые слова: нефтегазовый сектор, Узбекнефтегаз, соглашения о разделе продукции, инвестиции, инфраструктура, экономическая политика.

Abstract. This research seeks to scrutinize the consequences of the political transformation of state-owned enterprises in gas and oil industry of Uzbekistan in the last three decades. During the last three decades, the Uzbek government made five substantial reforms in the field of hydrocarbon sector. In each challenge, the state apparently intended to make the Uzbekneftegaz transparent, halting corruption and implementing corporative management in the companies.

Key words: oil and gas sector, Uzbekneftgas, Production Sharing Agreements, investment, infrastructure, economic policy.

Introduction. The oil and gas industry plays a crucial role in the development of the economic and social policy of Uzbekistan. Prior to the country's independence, the industry was managed directly by the state and administered by the Ministry of Energy. After gaining independence in 1991, the Uzbekistan government outlined privatization of the state companies.

By the structural reforms started in 1992, Uzbekneftegaz state-owned concern was established, and in the same year, it was reorganized as Uzbekneftegaz corporation (hereafter, I use Uzbekneftegaz as a general term to indicate all companies then reorganized regardless of further transformation in later years). The next stage of the development began in 1998 when Uzbekneftegaz corporation was transformed into Uzbekneftegaz national holding company (hereafter, Uzbekneftegaz NHC). The purpose of these policy revisions was to liberalize the industry partly and improve the productivity of the state company. Coming to 2017, newly elected President criticized the Uzbekneftegaz NHC and signed a resolution to restructure Uzbekneftegaz NHC into Uzbekneftegaz joint-stock company (hereafter, Uzbekneftegaz JSC).

In the 2018 and 2019 years, the Tax Committee and the Ministry of Finance published statistical reports about the fiscal policy, revenue, and expenditure in the previous years. And they declared that the most of top tax-paying companies were involved in Uzbekneftegaz JSC, which shared around 25 percent of all state revenue in 2018 and 2019[1]. It showed the importance of Uzbekneftegaz JSC as a prominent milk cow to the state budget.

However, despite having several structural upgrades, Uzbekneftegaz failed to play an active role in the international market while being dependent on state actions. Regardless of having significant structural changes, there was a scarcity of the corporate governance in Uzbekneftegaz JSC. The tax policy of the Uzbek government

drained the pocket of the Uzbekneftegaz, which did not let the latter to upgrade its technology, making research and development activities in the industry.

Besides, the newly selected President Mirziyoyev attended the 20th plenary meetings of the Senate, where he accused corruption in the country's oil and gas sector. The President underlined that over the two decades, the 50 percent of all projects in the hydrocarbon industry had been carried out through bribes. In particular, the officials in Uzbekistan received a side-payment amounting 80 million US$ to construct the Usyurt Gas Chemical Complex, while the project was estimated around 4 billion US$[2].

Further hindrance to Uzbekneftegaz has been the absence of human resources who can engage in new projects with leadership and in research in the oil and gas industry. As a result, Uzbekneftegaz failed to internationalize their mining and other actions, even in the neighbouring countries where abundant natural resources could have been a potential target of market expansion.

Literature review. There are ample researches which deal with the National oil companies (NOCs) and discuss either they were successful or not in the developing countries. On the other hand, it is quite difficult to find academic articles about the reforms of the NOCs in Uzbekistan because of the limited access to the data about NOCs in the country. More relevant researches stated that rents from natural resources are ineffective in developing countries particularly in former Soviet Union region as it secures remaining of an authoritarian regime, which postpones implementing effective reforms[3]. However, Loung and Weinthal indicated that mineral rich countries are cursed not because of natural resource abundance but rather the ownership structure they chose for management[4]. Auty indicated essential conditions to interpret the selection of the reform strategy in mineral-rich countries[5]. He compared two resource-rich countries, Uzbekistan and Turkmenistan with China and Vietnam as they all pursued gradual reform but with different approaches. Low mineral rents in China and Vietnam have boosted encouraging conditions for developmental policy and nurtured efficient resource use. Whereas, the scale and ease of rents from hydrocarbons in Turkmenistan have secured the authoritarian regime, which has postponed effective reform.

The research about the effectiveness of the public expenses in Soviet republics was conducted by Esonov and the result illustrated the considerable increase of the government spending from 2000 to 2007 because of the growth of oil and gas prices in the global market[6]. However, the amount money spent on the social sector remained notably lower compared to other transitional countries.

Methodology. The current research analyses the oil and gas sector in Uzbekistan. In particular, the performance and historical reforms of the Uzbekneftegaz are scrutinized. An extensive review of primary and secondary data will enable to highlight several causes which resulted in the unproductiveness of the state-owned company. The secondary sources involve relevant academic articles, newspaper reports and publications, as well as legal acts. Speeches and government press releases have also been collected and analyzed. The study has adopted a descriptive, analytical and exploratory approach. The purpose is to assemble the existing literature and ongoing discussions on the political transformation of the oil and gas sector, particularly of Uzbekneftegaz in the region and observing the obstacle for its improvement.

Analyses of reforms in oil and gas sector

Uzbekistan commenced the major industry reforms in 1991 when it gained its independence from the Soviet Union. As discussed in the preceding chapters, the hydrocarbon industry had a pivotal role in its economy. There were three phases in oil and gas reforms. The first phase began from 1992 when the Uzbek authority set up an Uzbekneftegaz State Concern (Uzbekneftegaz Concern) which focused on controlling the sector directly. After one year, the Uzbekneftegaz Concern transmuted into Uzbekneftegaz National Oil and Gas Corporation (Uzbekneftegaz Corporation) in order to attract foreign investment in the industry. The second phase extended between 1998 and 2016. It encompasses the establishment of the Uzbekneftegaz National Holding Company (Uzbekneftegaz NHC) with reducing the state share until 51 percent and creating six joint-stock companies under the Uzbekneftegaz NHC. Moreover, Production Share Agreement (PSA), which was a prompt for international companies investing in the country, was adopted in this period. The third phase of reform began from the transformation of the Uzbekneftegaz NHC into Uzbekneftegaz joint-stock company in 2017 and proceeded to the current time.

Table 1

The main periods of the development of oil and gas sector in Uzbekistan

Phase stages	Periods	Important refroms
The initial phase	1992-1997	**The institutional background for the hydrocarbon sector**
The second phase	1998-2016	Further liberalization and inviting investors to the oil and gas sector.
Third phase of the reform	2017-until present	The organizational improvements and further implementation of the corporate management

Resource: designed by author

1.1 The initial phase (1992-1997): the institutional background for the hydrocarbon sector:

In the first years of reforms, Uzbek authority pondered about generating a platform and accumulating whole companies in oil and gas in one organization to manage effectively. The preliminary stage was founding the Uzbekneftegaz Concern by the President's decree of Uzbekistan in 1992[7]. The Uzbekneftegaz Concern

incorporated manufacturing associations such as Sredazgazprom, Uzbekneft, Fergananefteorgsynthesis, and Sredazneftegazstroy. The objective of the merging companies into single production complex was to coordinate and link the activities of oil and gas from the bottom of the well to the sale of finished products[8]. In the same year, "Uzdavneftmahsulot" State Stock Company (hereafter Uzdavneftmahsulot SSC), which operated in the oil sales and production sector, was founded. The Uzdavneftmahsulot SSC functioned as a closed stock company, whose sixty percent of stock was held by the government particularly under the Finance Ministry with additional 40 percent by three companies, namely Uzbekneftegaz Concern, Tashkent and Fergana oil transportation company[9]. It is clear that hydrocarbon control splits out into two-state institutions Uzbekneftegaz Concern (specialized on gas exploration, production and transportation) and Uzdavneftmahsulot SSC (operations in the oil field).

In 1993, the Uzbekneftegaz Concern was transformed into the Uzbekneftegaz Corporation. The corporation united state-owned enterprises and companies that are engaging in the extraction, transporting, exploration and processing of hydrocarbons[10]. The first President of Uzbekistan, Islam Karimov, specified this structural transformation as a transition from command-administrative system to market mechanism method. Karimov highlighted three central expectancies from the fledgling reforms: first, a considerable growth of oil and gas condensate production, which contribute to gain oil independence in the country. Secondly, amplifying technology for hydrocarbon production and exploration, which nurtures the quality of production to international standards. Lastly, oil and gas reserves should be expanded in new areas.

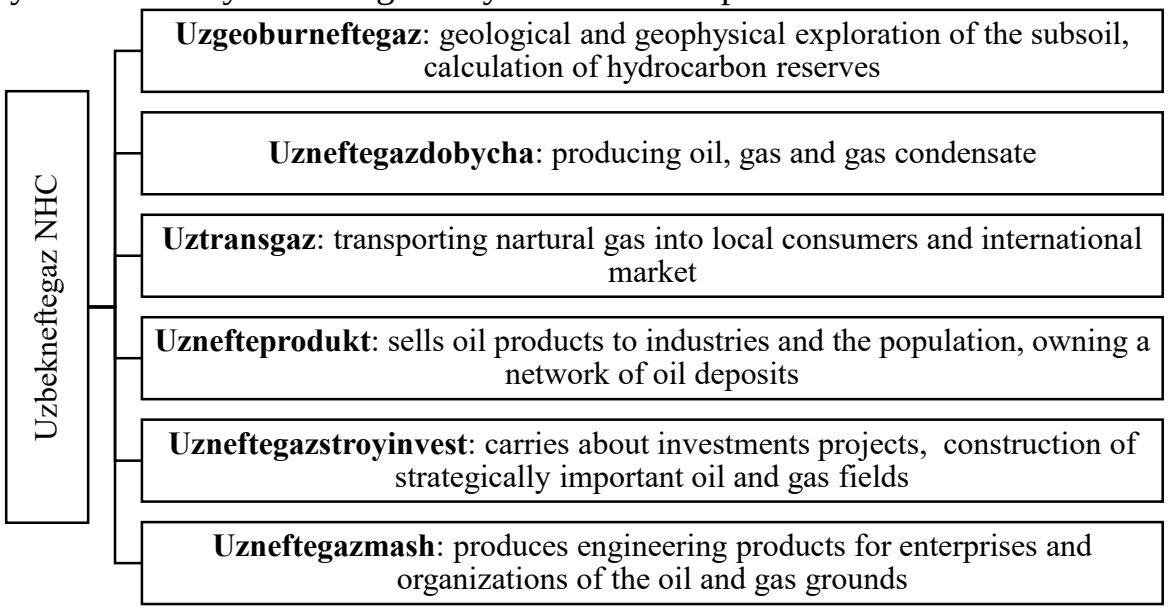
The Uzbekneftegaz Corporation banded together the state-joint-stock association "Uzneftegazdobycha" (which covers 23 organizations which care on exploration), the state-joint-stock association "Uzneftegazstroy" (12 extraction state companies), the state association of "Uzneftepererabotka" (2 oil Refineries), state joint-stock company on oil products "Uzgosnefteprodukt" (transportation oil products) and state association "Uztransgaz" (transportation of gas in local and international markets). The state accounted for the 99.7 percent of share for all corporations. The managing director of the corporation was K.Zh. Khakkulov which was appointed by the Cabinet Ministers of Uzbekistan. Notably, Khakkulov positioned Deputy Prime Minister of Uzbekistan until 1997.

In 1999, the Uzbekistan government declared the production of oil and gas that estimated eight million tons and 55,6 billion cubic meters, respectively. The output in the region was almost threefold compared to Soviet time (the production of oil and gas condensate increased from 3.1 million in 1991 to 8 million in 1999) with the utilization of local resources. However, the Uzbek authority failed in attracting large-scale investments in the oil and gas sphere[11]. The only considerable involvement occurred with Enron in 1996. For instance, Enron endorsed a contract estimating about 1.3 billion US $ for exploration of several gas fields in Uzbekistan. It deemed Enron's novel source of liquefied natural gas (LNG) for its power plants in India which estimated over $1 billion. The objective of the project was to transport gas to Pakistan using the Trans-Afghan pipeline[12]. Unfortunately, the project backed away because of the conflict with the US government. As a provisional strategy, Uzbek government

center on the enhancement of refineries, infrastructure and pipelines through a partnership with international companies. Several small-sized projects functioned in the industry. Baker Hughes company operated at the Northern Urtabulak field to refine crude oil in the locality and export commodity to Kazakhstan and Kyrgyzstan. A further joint venture established with Romanian RPT oil Holding company which focused on the development of the Zafar gas field. But it is recognized that Uzbekistan necessitated large-scale projects to export oil and gas to the international market directly.

1.2 The second phase (1998-2016): further liberalization and inviting investors to the oil and gas sector.

The second stage to revise the hydrocarbon sector concentrated on liberalization and increase foreign investments. In this period, diverse reforms were conducted that influenced the industry directly. The policy introduced in this phase was the transition of Uzbekneftegaz Corporation into National Holding Company with the full share of the state institution. On the other hand, the increase in corruption and taking dominance of the hydrocarbons by the ruling family started in this period.



Source: the author (data assembled from the official webpage of Uzbekneftegaz NHC http://www.ung.uz)

Figure 1. The structure of the Uzbekneftegaz NHC

The presidential decree on December 11, 1998, reorganized Uzbekneftegaz Corporation into Uzbekneftegaz National Holding Company (Uzbekneftegaz NHC). The main goal of the transformation was to deepen market relations in the republic's oil and gas industry, which opens up opportunities for attracting foreign investment.

Uzbekneftegaz NHC was an organizational management layer which vertically integrated companies, who carry out all types of activities related to oil and gas sector[13]. The Uzbekneftegaz NHC includes mainly the following six stock companies as described in the chart.

In April 2000, the government issued a decree "on measures to attract foreign direct investment in oil and gas exploration", contributing for the provision of benefits to investors to compensate for their geological risks. Following that, in 2001, the Law on Production Sharing Agreements (PSAs) was adopted, which extends benefits to

participants in mining projects. Furthermore, the issuance of the product share agreement (PSA) law in 2001 was crucial about boosting the investment climate in the oil and gas sector[14]. In the upcoming section, we describe the PSAs formation process and its pros and cons comprehensibly.

Product Sharing Agreement as investment boosting project

As discussed in the previous section, the scarcity of the large-scale projects in the hydrocarbon was increasing gradually by the end of 1990s. On December 7, 2001, the government adopted the decree No. 312-11 On Production Sharing Agreements" (PSAs). It provides that the state should guarantee for the foreign investors such as rights to explore deposits and extract minerals in the subsoil fields highlighted in the contract[15]. The concept of the PSAs is to clarify with the foreign investors and their host countries all their obligations and rights connected with investments in the proposed oil and gas project. In the PSAs, host states can accede to exceptional jurisdiction; the controversy over a PSAs adjudication should be dealt with in the intercontinental arbitration court rather than in regional tribunals. This "neutral area" is one of the essential components of the whole PSA concept[16].

In Uzbekistan, the first PSA contract was signed by "UzPEC" in April 2001, to explore and develop several fields in the Ustyurt plateau and southwestern part of Hissar regions. The capacity of UzPEC venture estimated the investment of $480 million, with the production of liquid hydrocarbons and natural gas estimated 50 million tons and 140 billion cubic meters, respectively[17]. A second agreement was signed in the late July 2001 with the Lukoil of Russia and ITERA. As stated in the agreement, Lukoil and ITERA hold 45 % of each and Uzbekneftegaz owns 10 percent of share. This project also contained manifold fields, in the Bukharo-Khivinsky and Hissar area with an estimated $750 million of prospective capital and the predicted production of 10 million tons of liquids and 250 billion cubic meters of gas (Press release of Lukoil, 2001).

However, international oil companies failed to find PSAs conditions as appealing as those provided in other countries of Central Asia and Russia. Investors often made references to a political situation in Uzbekistan in connection with the existence of Islamist opponents to President I. Karimov and high-level of autocracy in the country[18]. Moreover, a number of the articles of Uzbek PSA law includes some statement which noticed either troublesome or at least should be upgraded from the perspective of external investors. The first significant issue expressed in Article 5, which limits permission only for unproven mineral resources. Basically, this provision left the most potential mineral fields under the jurisdiction of the Uzbek government, whereas the riskiest areas are shared with foreign investors. Owing to the fact that a significant part of the Uzbek ground has been observed, and the location of proven mineral reserves are mainly determined.

Furthermore, the PSAs give the state an unlimited power during unexpected incidents or conflict with the other side of the contract. As stated in Article 26 of this law, the Cabinet Ministers and substitutional state institutions execute management over implementation of the agreement, and completion of the project in the asserted time in compliance with legislation[19]. Moreover, there was significant space left in the legislation of Uzbekistan concerning the licensing pertinent to exploration and

production in the industry. Despite the fact that the PSA regulation highlights that a license or permission for utilizing a subsoil field should be regularly issued within 5 days or more, the legal document about subsoil licensing process did not identify and explain this aspect comprehensibly[20]. The only legal act expounding governmental institution in the control of issuing a license is expressed in the Decree UP-2598. The document approved the Uzbekneftegaz NHC to furnish permission for exploration, observation and production of oil and gas deposits. Regardless, this decree failed to elucidate the mechanism of acquiring such kind of license[21], which left unclarified this pivotal issue in the last three decades.

Investment inflow in the hydrocarbon sector after introducing PSAs

The leading oil companies operating in the hydrocarbon sector in Uzbekistan originated from Russia: Lukoil, Gazprom, and Soyuzneftegaz East Limited, a subsidiary of the Soyuzneftegaz investment and financial group. Lukoil plans to develop the Kungradsky site in the North-Ustyurt NGO, the Kandym group of fields, as well as the Khauzak and Shady fields in the Bukhara-Khiva region. Moreover, it is planned to commission the Khauzak and Shady fields, the proceeds from the sale of gas from which will be directed to the development of Kandym and Kungrad. The gas produced at the grounds of the Kandym group will be sold to Gazprom and exported to Russia. The project also provides for the construction of a gas-chemical complex with a capacity of 6 billion cubic meter per year, the first phase of which can be commissioned in 2010. The company's investments in 2007 amounted to $ 170 million. Recoverable reserves of the Kandym-Khauzak-Shady block and seven fields of the South-West Gissar project for 2016 were about 160 billion cubic meters, and production increased compared to 2015 into 4.75 billion cubic meters. The increase in production volumes at Lukoil projects will be a crucial moment for maintaining the current level, by 2020 the Russian company will account for about a third of all production (18-19 billion m^3) and in fact its entire increase[22]. And all this will happen against the background of the depletion of deposits, exploited since Soviet times.

The first cooperation of Gazprom with Uzbekneftegaz began in 2002 when a strategic partnership agreement was signed providing for a sequential increase in gas supplies to Russia, prolonged and expanded in 2007. In 2003, a framework agreement was signed on joint development of deposits in the promising Ustyurt region. In 2004, a PSA was signed for a period of 15 years with an initial investment of $ 15 million, implying the participation of Gazprom in the process of restoring gas production at the Shakhpakhty field. In January 2006, Gazprom and Uzbekneftegaz signed two agreements defining the principles of geological exploration of the subsoil of the seven investment blocks of the Ustyurt region and the main points of the production sharing agreement (PSA) of the fields of Urga, Kuanysh and Akchalak group of the Ustyurt region in the western part of the country. The activities of Gazprom in Uzbekistan are carried out mainly through a subsidiary of Zarubezhneftegaz. Furthermore, Gazprom International is developing (jointly with Uzbekneftegaz) the Shakhpakhty field, the production of which was launched in 1971. Thanks to the additional exploration of the area and the application of measures to increase gas recovery, Gazprom managed to increase production to 350 million cubic meters by 2015. According to the 2004 division agreement, the parties agreed to increase production at the field to 500 million

cubic meters, so the secondary peak of Shakhpakhty may still take place in the coming years.

As discussed in the second period, the state formulated several legal documents to attract foreign investment in the oil and gas sector. The most significant projects carried out only with Russian companies in the strategic level while other international investors frightened to come into the market. The lack of transparency and corruption in the industry commenced from this period.

Third phase of the reform (2017-until present): the organizational improvements and further implementation of the corporate management

After the election in 2016, the newly arranged government embarked on reconstructing the strategic sectors of the country. Although the oil and gas industry could keep its significant position, what was clear is that previous efforts failed to yield the expected outcome. The state considered to privatize Uzbekneftegaz by changing structure and taking some governmental function from company entrusting the newly formed the Ministry of Energy. The third phase of reforms witnessed various attempts to reshape and improve corporate governance. Initially, the reconstructing of Uzbekneftegaz from a national holding company into a joint-stock company enacted in 2017, which was a prevalent policy for all state-owned enterprises in Uzbekistan. In proceeding two years, the Uzbek government considered new reorganizing strategy which was focused on improving transparency and implementing international corporate governance method in the management of the company. Furthermore, in September 2019 Ministry of Energy was formed, and the share of Uzbekneftegaz transmitted into the ministry. Coming to 2020, Uztransgaz, which carried out the transportation of the hydrocarbons in the domestic and international market was retracted from Uzbekneftegaz.

A new policy in 2017 restructured Uzbekneftegaz NHC into Uzbekneftegaz JSC. The objective of alteration was to terminate the inefficiency, lessening preferential credits or loans, and privatize non-core assets. This step was a preliminary stage for further privatization and implementing the management structure to become international companies. In the governmental meeting and the mass media, CEO of the Uzbekneftegaz affirmed that it has a two billion US dollar debt from international organizations, and the company is incapable of returning money wholly[23].

In July 2019, the President of Uzbekistan signed the resolving act that equips it with measures to enhance the hydrocarbon industry. The legal document expressed that the contemporary old-fashioned and non-transparent management structure, which integrates regulating responsibility and mercantile activities, hinder the expansion of the oil and gas sector. In consequences, in spite of the 8% increase in natural gas production over the two decades, the capacity of its manufacturing by local companies dropped to 29%. Furthermore, the average proportion of hydrocarbon reserves renewed over the last five years estimated only approximately 70%[24]. Therefore, the resolution signed to set measures to settle ongoing problems in the country's hydrocarbon sector. Uzbek government is stipulated to collaborate with international consulting companies and commercial institutions, and they elaborate a framework for improving efficiency of the oil and gas industry of Uzbekistan up to 2030.

On the whole, the oil and gas sector were split into three independent companies, Uzbekneftegaz JSC, Uztransgaz JSC and Hududgaztaminot JSC under the jurisdiction of the state. The intermediary organization in the management structure of Uzbekneftegaz was eliminated and then amalgamated into four joint-stock companies. The Uzbekneftegaz is accepted as the legal successor of these enterprises while staying under the regulation of the Ministry of Energy. Additionally, six oil and gas producing, and gas processing entities rearranged from joint-stock companies into six limited liability companies. Such a restructuring was intended to create efficient management of hydrocarbon producing factories[25]. The three-level management system of the Uzbekneftegaz which commence in 1998 with the establishment of holding company finalized in this period.

Secondly, the Uztransgaz JSC (gas transmission and distribution entity) withdrew from Uzbekneftegaz, and the share of the company transferred into the Agency for Management of State Assets of Uzbekistan (hereafter, the Agency for Management). The Uztransgaz JSC purchases natural gas and other products from gas extraction and processing enterprises, containing joint enterprises and international companies operating in the local market on the basis of PSA. Moreover, Uztransgaz JSC serves as a retailer of the gas into the global market with direct contracts in the pipelines and for local market too. Thirdly, the Hududgaztaminot JSC (gas provider enterprise in a local market) was founded based on the domestic gas supply divisions of Uztransgaz JSC. The Hududgaztaminot JSC functions in the local market and supplies liquified gas to the population and social facilities. The share of the Hududgaztaminot JSC was transmitted into the Agency for Management to govern the company effectively.

The Agency for Management is a state institute, focused on conducting a unified state policy for the effective management of state assets in the commercial enterprises. The authority emphasized diverse objectives on the Agency for Management: firstly, it is aimed at the implementation of modern methods and structure of corporate governance in state-owned enterprises based on preeminent international practices and increase the role of shareholders in the management and supervisory boards. Secondly, in cooperation with international financial institutions and guidance, the enterprises with state participation should transform into productive companies which are capable of competing in the domestic and international market. Lastly, it was intended to secure the accountability and transparency in the enterprises[26].

The succeeding measurement in this direction was the creation of the Ministry of Energy of Uzbekistan. The Ministry of Energy was founded in line with the presidential decree (01.02.2019 No. UP-5646) which was intended to progressively ameliorate the management system of the fuel and energy sector of Uzbekistan. The Ministry of Energy and its member institutions shall set the state policy for production, transmission, distribution and consumption of any variety of energy, coal, as well as the extraction, processing, transportation, distribution, sale and use of hydrocarbons, and any types of the gas condensate. As revealed above, unessential intermediate companies in the management system of Uzbekneftegaz JSC were reduced.

Conclusion. The current chapter has analyzed the history of the reforms occurred in the oil and gas sector, the privatization policy and corporate governance changes which had considerable influence on hydrocarbon industry in Uzbekistan. In the first section, the reforms in the hydrocarbon industry were comprehensibly described by categorizing in three phases starting from 1992 to present days. Initial phase included periods between 1992 and 1997 where all enterprises operating in the oil and gas sector amalgamated into single state-owned Uzbekneftegaz Corporation. In this phase, Uzbek government was unsuccessful in attracting large-scale investments in the oil and gas sphere[27], and the only considerable investment was made by Enron roughly 1,3 billion US$ which, however, left the country after conflicts with United States.

Significant transformations were implemented in the second phase from 1998 to 2016. The Uzbekneftegaz NHC was founded that unified six enterprises conducting all types of activities related to oil and gas sector. Moreover, in 2001, the law on PSA was adopted which provides the state guarantee for the foreign investors to search, explore, and extract minerals in Uzbekistan. The first PSA project was conducted with Lukoil and ITERA where Uzbek government possessed only 10 % of the venture. This stimulated foreign companies especially Russian thinking about investing in Uzbekistan. Large-scale projects in the hydrocarbon industry notably increased in this era compared to previous years.

The third phase started from 2017 and concentrated on the corporate governance in SOEs of the oil and gas sector of Uzbekistan. In 2017, the state transformed the Uzbekneftegaz NHC into Uzbekneftegaz JSC and aimed to reduce the state share until 51%. Subsequently, in 2019, the President of Uzbekistan signed the resolving act that provides for measures to enhance the hydrocarbon industry particularly improving transparency and implementing international corporate governance method in the company.

In overall, however, the Uzbek authority refused to forced and emergency privatization methods and the most of the privatization policies were occurred in small and medium-sized state companies. The large-scale SOEs in significant industries has been persisted under state control. The significant changes occurred in 2015 when the President introduced revolution on implementing modern corporate governance methods in joint-stock companies. All these efforts, notwithstanding, remained unsuccessful. In 2020, the president criticized the unsuccessful implementation of the corporate governance in SOEs and signed a resolution about improving the efficiency of management system in large-scale SOEs specifically in mining sector.

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ANALYZING THE KEY FACTORS IN THE CREATIVE PROCESS

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Annatatsiya: Ushbu maqolada yaratuvchanlik jarayoniga tasir qiluvchi omillardan ikkitasi, ya'ni, insonning shaxsiy hislatlari va ular mavjud muhit ko'rib chiqilgan va shu ikki omil haqidagi zamonaviy ilmiy nazariya va yondashuvlar tahlil qilingan.

Kalit so'zlar: yaratuvchanlik, innovatsiya, hislatlar, ichki muhit, tashkilot muhiti, bilim, tavakkalchilik.

Аннотация: В статье обсуждаются два важных фактора творческого процесса и анализируются текущие исследования этих двух факторов.

Ключевые слова: креативность, инновации, черты, внутренний климат, организационный климат, знания, рисковать.

Annotation: In this paper looked through two of the important factors in the creative process, that is, personal feelings of a person and the environment in which they exist as well as analyzed modern scientific theories and approaches about these two factors.

Key words: creativity, innovation, traits, internal climate, organizational climate, knowledge, risk taking.

Introduction. The current state of the art on idea generation/ innovation development and innovation/creativity implementation is diverse and suggestions with contradictory points of view exist [32,5,10]. We can generalize, however, most of the research into three broad areas: Traits of the team members [29,11], Climate [24,12] and leadership, two of which will be discussed below.

I. Personality traits

There is subtle difference between personality traits and attitudes. **Traits** usually described as unchanging throughout life, do not change in response to the circumstance that occur. **Attitude** on the other hand are formed by the external factors and change

in adapting process to new events and circumstance [26]. A. Østergaard [34] portrays this idea in his Wheel Model (Figure 2). He discusses that in entrepreneurs success (which automatically include creativity, as creativity and innovation lies in the core definition on entrepreneurship) comes from psychological variables, which can change with time, experience, and invariables which tend to stay same despite the things that happen to the person.

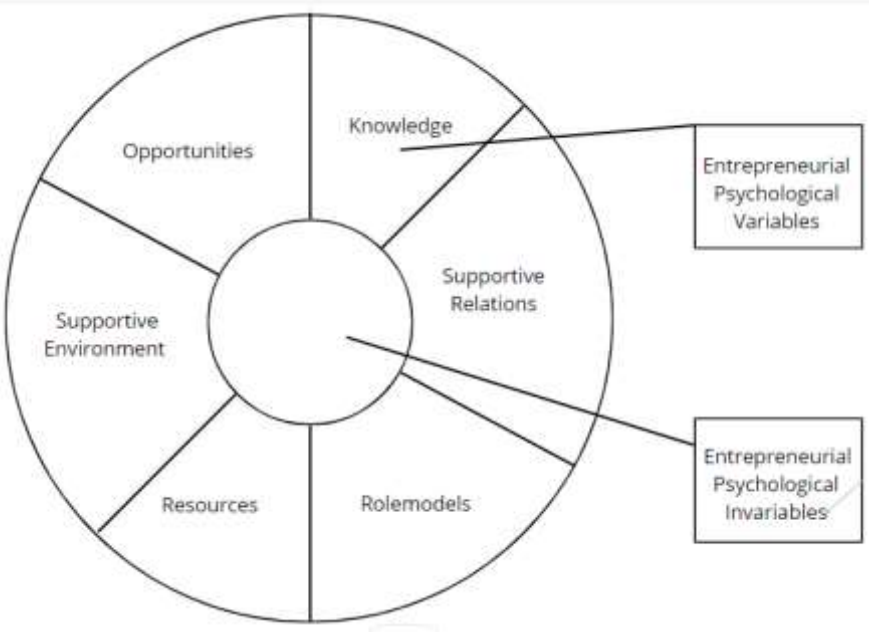

Figure 2. The Psychological Variable Wheel Model of Entrepreneurial Personality Attributes [34].

Invariables are far more important than the variables, because the invariable determines which knowledge we accept and which ones we tend to ignore, which opportunity we take and which ones we are afraid to take. Woodman et al. [33] state that in order for ideas generated to be put into implementation we need individual attributes – personality (the invariable), skills and motivation (internal variables) and contextual features (external variables). Creativity and success can be posited that occurs when there is a positive relationship between the invariable and internal/external variables. So, how do we determine which traits (both variables and invariables) the people have? There are a number of classification of traits and tests to check which one a person has. Raymond Cattell analyzed 18000 adjectives that describe personality over 50 year's period and narrowed them down to 16 basic personality traits. His test is arranged in a way that those 16 traits are contradicting pairs during the measurement [34]. Holland [13] used six traits. People can place themselves inside the hexagon depending on how they consider themselves close to any given trait.

There are a number of studies which state that correlation between personality traits and entrepreneurs' success is very small [2, 21]. Due to the fact that there are usually a lot of others factors that influence to the success. Another important downside of using personality tests to determine the correlation between success and traits is that people do not always tell the truth or in some cases they are not aware of their certain characteristics. JoHari's Window, developed by Joseph Luft and Harry Ingham, point out that one fourth of our personality is hidden for ourselves and for others. Therefore,

we cannot be hundred percent sure that people will be have in a fixed way in a fixed circumstance [22].

However, majority of the studies support the idea that personality traits do play important role in the success. For example, Rauch & Frese [27] performed 54 studies testing the relationship between the business success and owners' traits. They found the dominance of the following traits: self-efficacy, proactive personality, tenacity, need for achievement, stress tolerance, goal orientation, need for autonomy, innovativeness, endurance, flexibility and passion for work. Another research shows six psychological themes: a need for control, a sense of distrust, a desire for applause, a tendency to 'split', scapegoating and the flight into action [19].

McClelland [23] unlike others focus on four personalities: high achievement motivation, a need for autonomy, power and independence. These traits can further generalized and classified into larger groups or they can be further break down into smaller sub-categories. Overall, studies in general compensate or overlap each other. Table 2 shows the survey from 2012 which illustrates the Six Highest and the Six Lowest Personality Traits, their Functional Categories and the Basic Aptitudes. If we look at the six highest scoring traits, we can see that three out of six traits enables the person to innovate and to be creative. So, creativity has 50 percent importance in the success of the entrepreneurs. Two of them gives leadership potential and the last one – Autonomy – provides chance to be effective, which in other words can be described as climate to perform. We can summarize that the survey also matches our above mentioned classification of research on creativity: all three categories traits, leadership and climate can be derived from the personality traits. It shows that research on personality can explain other studies on leadership or organizational climate.

Table 1.

Ranked score on the Six Highest and the Six Lowest Personality Traits, the Functional Categories and the Basic Aptitudes of 55 Entrepreneurs. The Østergaard Survey 2012 [32]

Ranked Score	Personality Trait	Functional Category	Basic Aptitude
Highest 1-6			
1	Personal Manifestation	Vitality	Innovation Potential
2	Preparedness for Change	Growth	Innovation Potential
3	Achievement Instinct	Efficiency Management	Leadership Potential
4	Risk Willingness	Change Management	Leadership Potential
5	Autonomy	Integrity	Potential of Effectiveness
6	Vigor	Power	Innovation Potential
Lowest I-VI			
I	Stress Tolerance	Integrity	Potential of Effectiveness
II	Social Maturity	Co-operation	Social Potential
III	Tolerance	Co-operation	Social Potential
IV	Democratic Attitude	Co-operation	Social Potential
V	Experience of Well-being	Growth	Innovation Potential
VI	Adaption Capacity	Interaction	Social Potential

Research shows that in the Big Five personality factors, there is positive relationship between creativity and Openness to Experience, Extraversion and Conscientiousness, but negative relationship with Neuroticism and Agreeableness [18]. Sung and Choi [29] argues that Agreeableness can be a positive predictor of the creative performance when the person carrying out the creative process has low extrinsic motivation. Alternatively, West [31] points out that there are two main factors that are important for innovation: Support for innovation and Climate for excellence.

West [31] defines Support for excellence as "*practical support of attempts to introduce new and improved ways of doing things in the work environment*" and Climate for excellence as "*excellence of quality of task performance*". Eisenbeiss and others [10] state personality traits do not directly influence on innovation, but they influence on Support for innovation and Climate for excellence, which consequently lead to innovation. They also claim that the whole process should be mediated by transformational leadership. (The research on Transformational leadership itself regarding creativity varies, some have positive effects [17] while other found negative effect [15]). Amabile [4] lists three main component of creativity: task motivation, domain-relevant skills and creativity-relevant process. Taggar [30] considers that although it is important that team members have abilities of a creative person (certain traits) without "creativity-relevant processes" (which can be explained as climate) the team's effectiveness is neutralized.

Climate. Johnson [16] uses an example from nature to explain creative climate. He brings an example of "**Darwin's Paradox**". Darwin found out that coral reefs have the most diverse ecosystem in the ocean. And this diverseness creates interaction between species enabling creation of new forms of life. Also, another factor in this system is that they all located very close to each other. So, ecosystem for creativity, or as we refer to it here as climate requires diverse individuals and teams interact to each other in close geographical/virtual proximity. Although, everybody agrees that this is true in general, it is also believed that there is no universal recipe for continuous creativity creative climate is individual [25].

Amabile [3] suggest that in order to have creative climate in work place, the management should pay attention to the following six areas:

A) Challenge – the manager should find the perfect balance of challenging yet accomplishable task for the team/individual

B) Freedom – she suggests that managers should control the goal and give freedom for process of achieving the results. But, there also exists studies on benefits of giving freedom in choosing the goals as well. Famous examples of application of this method are 3M and Google.

C) Resources – although there are cases studies showing that lack of time and material resources increase creativity, in most of the cases availability of time and money is more beneficial.

D) Work-Group Features – having diverse set of people with common vision and excitement is key for team success.

E) Supervisory encouragement – management should praise and positively accept any creativity, even the commercial potential of that idea is not obvious yet.

F) Organizational support – People are more willingly and open to think creatively when they know that people around them are also doing so.

Creativeness is associated with a single great idea or "Aha" moment. However, this is not the case. Creative idea/innovation can form in two ways: First, it can form in an assigned team, where members brain storm, an idea from one member will be slightly changed by the other or the third person finds association with completely something else and creates a new product; Second, this whole process can happen inside one person's mind with the help of "unofficial" members of his/her collective team. These can be an article that he read, an idea by a friend, news watched on TV or even advertisement billboard in metro. All those information is built up in our mind and one day the subconscious level of our brain will bring the completed package. This process is sometimes referred to as "**slow hunch**" [16].

When discussing creativity of a team, we sometimes run into references of group creativity and collective creativity. There are different definitions of the terms. But for this study, collective creativity should be distinguished from a group creativity. Here, we define a group as a people who know each other for certain level, has some general social interaction, like working/studying together. In most of the cases, the creativity process has been assigned by a superior or emerged as a side work from their day to day activities. While collective creativity will focus on people who may or may not know each other prior to the creativity process. In some literatures this type of a team is referred to as a crowd [14]. In other words, it is a collaboration of strangers for the vision/purpose they share. This form of collective creativity has been growing due to the growth of online communities and other web sites which foster communication. As an examples of the effectiveness of this method, we can show Wikipedia, Linux operating system, Open Ideo etc.

Climate in a group or organizations is defined by the members of that particular group. As we mentioned above, while choosing entrepreneurs we have to pay attention to a particular people, meaning people with certain personalities. But, what should be the ratio of those people, what kind should be dominant in the climate. Stanford Graduate School of Business students are diversified in several aspects. The head of the school considers this is one of the most important factors in the classroom success and future professional success of the students. The majority of the group comes from people of safe choices, they had business degree, worked in prestige institution and have good experience and knowledge (50 percent of the group). 5 – 15 percent is selected from people who have particular talent in one area. Areas are widely ranging. They can be physics national competition winners or world class violinist. 25 percent comes from diverse cultures, ethnicities, religions and regions of the world. The last group is the people who have diverse life experience regardless of the background. A military commander can be an example for that kind of life experience [6]. The same ratio can be applied to the members of the team. However, the university considers the social background, anyway psychological background that we discussed should also be considered for forming the team.

Managers usually fear that people with diverse backgrounds and thinking styles will have problem getting along, thus creating problems in the work place and they will be hard to manage. Leonard and Straus [20] explains what they call "*creative*

abrasion": climate should be deliberately made diverse and managers should try to teach members of the team to appreciate various thinking styles and cultures. As an example they bring the success of this in Xerox Park and Interval Research.

Innovation in an organization can be powered via different channels, like technology acquisition, investing into external R&D labs, development of existing products etc. However, only if the organization creates a climate for innovation, sustains a creative workforce, they can be competitive and hold their edge [7]. Climate is gaining more attention in the business world. In the beginning, business mainly paid attention to individual's personality traits, when they wanted to assemble creative workforce. Now, they are paying more attention to organizational and team structures to increase creative performance [4].

Csíkszentmihályi [9] state that creativity on an individual happens in **the state of flow** and usually it takes other people's contributions to reach that state. Organization would need to create a system to enable that. Organization should have structure which supports new knowledge and external sources. Cohen and Levinthal [8] use the term 'absorptive capacity' to explain this. They define it as "the ability of a firm to recognize the value of new, external information, assimilate it and apply it to commercial ends". Same structure should allow their employees to try themselves in various role. Small business owners and startups are excellent example for this method. Because of the fact that they don't usually, at least in the beginning, have employees to perform certain tasks, they do the task in most cases interchangeably allowing them to apply each ones style of work or thinking in that particular task. Which may bring to the improvement. A lot of companies use this method to increase innovation and creativity in their companies. The companies like 3M, Johnson and Johnson's, Microsoft, Hewlett-Packard encourage their workers to move around the company trying different jobs [35].

Conclusion. Before explaining the system, we should define the actual term. Monitored chaos, in this case, is a situation where the units meet, collide, interact with each other in an atmosphere pre-designed for this purpose and outside of it without actual goal in each meeting; and this process is monitored by the individuals/organizations with the purpose of detecting the ideas. The units in our case are the team members, the head of the team or manager in companies will create the atmosphere where they will interact and in outside meetings in their social occasions. The manager (in large companies) will periodically will bring the different teams together for meetings and talks. The each meeting doesn't have to have exact goal, the process itself is more important than the goal. These meetings will be the source of innovation. There are a lot of examples where simple social meetings of people became the incubator for innovations [16].

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METHOD AND SOFTWARE TO FIND SPELLING MISTAKES IN TEXT WRITTEN IN UZBEK LANGUAGE BASED ON THE LATIN ALPHABET

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Annotatsiya: Ushbu maqolada o‘zbek tilida yozilgan matnlar uchun matn terish xatolarini aniqlovchi va ba’zi o‘rinlarda tuzatuvchi dasturiy ishlanmaga bag’ishlangan. Doimiy ish jarayonida lotin yozuviga asoslangan o‘zbek tilidan foydalanilayotganligi va kiril yozuvidan lotin yozuviga o‘tishda ba’zi tushunmovchiliklar mavjudligi sababli matn terish xatolarini topish va tuzatish alohida muhim masala hisoblanadi. Maqolada o‘zbek tilida yozilgan matnlarda orfografik xatolarini topish bo‘yicha ishlab chiqilgan dasturiy vosita ahamiyati va uning afzalliklari yoritib berilgan.

Kalit so‘zlar: imlo xatolarni tuzatish, asos va qo‘shimchalar, o‘, g‘ harflari imlosi, x va h harflari imlosi.

Аннотация: Данная статья посвящена разработке программного обеспечения для узбекских текстов, которое выявляет орфографические ошибки и исправляет их в некоторых местах. В связи с постоянным использованием узбекского языка на основе латиницы и некоторыми недоразумениями при переходе с кириллицы на латиницу особенно важно находить и исправлять орфографические ошибки. В статье описывается важность и преимущества

разработанного программного обеспечения для поиска орфографических ошибок в текстах, написанных на узбекском языке.

Ключевые слова: исправление орфографических ошибок, корней, приставок и суффиксов, правописание букв «o‘», «g‘», правописание букв «x» и «h».

Abstract: This article is devoted to software development for Uzbek texts, which detects spelling errors and corrects them in some places. Due to the constant use of the Uzbek language based on the Latin script and some misunderstandings in the transition from Cyrillic to Latin, it is especially important to find and correct spelling errors. The article describes the importance and advantages of the software developed for finding spelling errors in texts written in Uzbek.

Keywords: correction of spelling mistakes, roots, prefixes and suffixes, spelling of letters “o‘”, “g‘”, spelling of letters “x” and “h”.

Introduction. The relevance of spelling correction software is that it helps to eliminate spelling errors and omissions that may occur in various documents, texts, and articles. This, in turn, is important to prevent situations such as violations of language norms, an increase in the misuse of lexemes in languages, and the gradual normalization of these errors.

To date, the Uzbek Spelling Dictionary has identified more than 85,000 correct spelling words and word forms [1]. One of the most common mistakes is the inverted use of the upper right side of the letter “o‘” in our alphabet, which represents the sound and the letter “o‘”, and the same confusion is used with the letter “g‘”, which represents “g‘”. There are also errors in the use of the letters “x” and “h”. For this reason, it is important to check and correct the Uzbek text for spelling errors.

Analysis of the most common spelling mistakes in the Uzbek language

Many spelling mistakes are made in the process of writing in Uzbek. If spelling mistakes are not corrected regularly, these words will be misspelled and the words will change altogether. There are different ways to detect errors [3]. They can be used in Uzbek spelling dictionary, annotated dictionary or in programs that help to find and edit mistakes [2].

One of the most common mistakes in the Uzbek language is given in the following table:

Table-1. The most common mistakes in the Uzbek language.

	wrong	wrong	wrong	right
The symbol used in the letters “o‘” and “g‘”	o`, g`	o', g'	o’, g’	o‘, g‘
The modifier letter apostrophe	`	'	‘	’

Another common mistake is to misuse the letters “x" and “h”. Because these two letters represent different sounds, it is important to use each one correctly. For example, the words “xush” and “hush” are semantically different. For example: “Xush kelibsiz”, “Hushidan ketmoq” [1].

It follows that it is important to know the norms of literary language when writing and using texts in Uzbek. Knowledge of literary language norms is also required in the process of software development. This, in turn, will greatly helps to understand how mistakes are made and how to fix them.

Roots and suffixes

In Uzbek, as in other languages, words consist of root and suffixes. That is, a word may contain a root and one or more suffixes. The root word is the part of speech that can come into its own and is independent and meaningful. Adding prefixes and suffixes to word stems creates completely new words. There are many such suffixes in Uzbek language. For example, conjunctions: “-ning”, “-ni”, “-ga”, “-dan”, “-da” help to connect words by joining the root, and they are also called word-changing suffixes.

Genitive case can be answered by questions “kimning?”, “nimaning?”, “qayerning?”. The suffix of genitive case is “-ning”. “-ning” suffix connects a noun to another noun. The nouns of genitive case are in the main role. Examples: “o‘quvchining kitobi”, “ko‘ylakning yoqasi”, “daraxtning kurtagi”, “buloqning ko‘zi”.

Accusative case can be answered by questions “kimni?”, “nimani?”, “qayerni?”. The suffix of accusative case is “-ni”. Accusative case suffix connects a noun to verb in the sentence. The nouns of accusative case are main parts of sentence. Examples: “She’rni o‘qidi”, “Multfilmni tomosha qildi”.

Dative case can be answered by questions “kimga?”, “nimaga?”, “qayerga?”. The suffix of dative case is “-ga”, (“-ka”, “-qa”). Accusative case suffix connects a noun to verb in the sentence. The nouns of accusative case are main parts of sentence. The “-ka” suffix is added to the nouns which end with the sound “k”, the “-qa” suffix is added to the nouns with the last sound “-q” and in other cases “-ga” suffix is added to the nouns.

Ablative case can be answered by questions “kimda?”, “nimada?”, “qayerda?”. The suffix of ablative case is “-da”. Ablative case suffix connects a noun to verb in the sentence. The nouns of ablative case are main parts of sentence. Examples: “Saroyda ishladi”, “Tog‘da yashaydi”.

In addition, there are word-forming, noun-forming, adjective-forming and verb-forming suffixes.

For instance:

word-changing suffixes are “-ning”, “-ni”, “-ga”, “-da”, “-dan”;

word-forming suffixes are “-chi”, “-la”, “-li”, “-kor”, “-dosh”;

noun-forming suffixes are “-chi”, “-zor”, “-dosh”, “-kor”, “-k”, “-q”;

adjective-forming suffixes are “-ser”, “-be”, “-siz”, “-li”, “-chan”, “-dor”, “-q”;

verb-forming suffixes are “-la”, “-lan”, “-sira”, “-illa”, “-(ulla)”, “-lash”.

Noun-forming suffixes are added to words and made nouns. Examples: “chi”, “hasharchi”; “-zor”, “g‘allazor”; “-dosh”, “sinfdosh”; “-kor”, “paxtakor”; “-k”, “elak”; “-q”, “-taroq”.

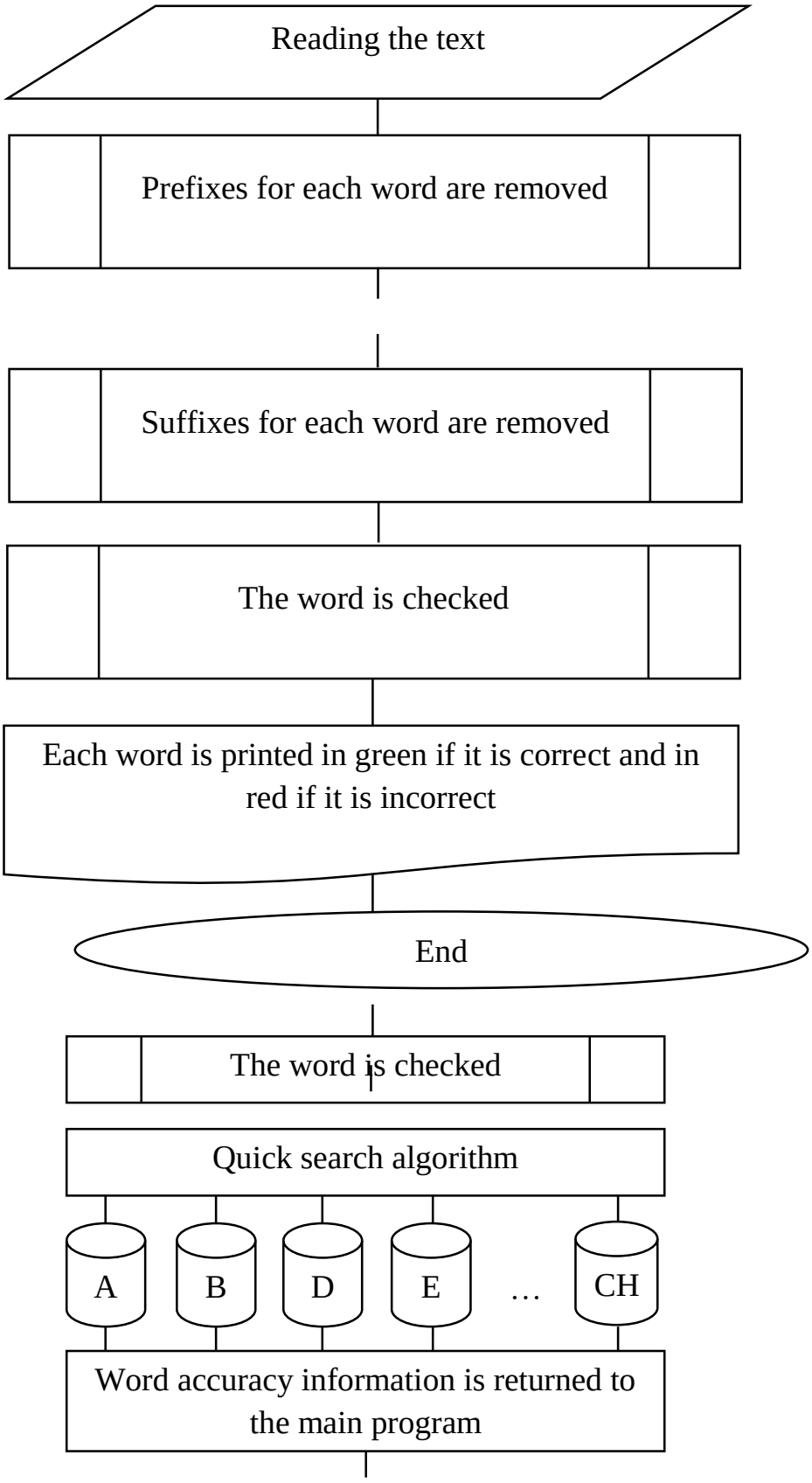

Figure-1. Block scheme of program

Software development process

In the process of developing the program, an attempt was made to find a solution by studying the norms of the Uzbek language. From the above information, it follows

that words in the Uzbek language are formed from suffixes added to the roots, and by adding many suffixes to one root, completely different words are formed. So it can be a bit tricky to check every word in the text to see if it's incorrect. For example, the word “kitoblarimizning” consists of parts such as “kitob”, “-lar”, “-imiz”, and “-ning”.

The solution is to examine the roots and suffixes separately. This makes the software less cluttered and easier to find errors.

How the program works

With the help of the Uzbek dictionary based on the Latin script, a separate database for stems and suffixes was created. Suffixes are also divided into prefixes and suffixes. The program is installed in Microsoft Word in macro mode, the desired text is selected, and macro is run to detect spelling errors in the text. When the macro starts, it first checks to see if the selected word has prefixes. All prefixes are compared, and if there is a prefix, it is removed and re-checked. The process continues until there are no prefixes left. The next step is to check for the presence of suffixes by comparing them through a database of suffixes. This process continues until there are no more suffixes in the word. The word without suffixes is checked from the base database. If the word does not exist in the database, it is considered an error. Even if there is an error in the suffixes, it will not be found when comparing through the databases of suffixes and the database of roots, and will be automatically recognized as an error. Words found to be incorrect are highlighted in red. All words in the text are checked in the same way.

The present continuous tense verb (“hozirgi zamon fe’li”) refers to an action that is performed (or not performed) while speaking. “-yap”, “-moqda” are present continuous tense (“hozirgi zamon”) suffixes. For example: “O‘rik bechora oppoq, nozik gullarini qayoqqa yashirishni bilmayapti”.

The future tense verb (“kelasi zamon fe’li”) refers to an action that can be performed (or will not be performed) after the speech. “-moqchi” is a future tense (“hozirgi zamon”) suffix. Example: “Sevara o‘zi yozgan she’rini o‘qib bermoqchi”.

The past tense verb (“o‘tgan zamon fe’li”) refers to an action performed (or not performed) before the present tense. “-di”, “-gan” are past tense (“hozirgi zamon”) suffixes. For example: “Dilnozaning uyiga Sarvi xola chiqdi”.

The past tense suffix “-kan” for verbs ending in “k”; for verbs ending in “-q”, “-qan”; added to other verbs in the form “-gan”. Examples: “qirq” – “qirqqan”, “qo‘rq” – “qo‘rqqan”, “cho‘k” – “cho‘kkan”, “chop” – “chopgan”.

The program also includes the function of correcting the special character of the letters “o‘” and “g‘”. The function searches for the symbols “o” and “g”, if one of the symbols “ ' ”, “ ` ”, “ ’ ” is used after them, it replaces the characters with the symbol “ ‘ ”. If the special character “ ‘ ” of the letters “o‘” and “g‘” is dropped, the program will recognize the word as an error. In the same way, if one of the “ ' ”, “ ‘ ” or “ ` ” characters is used instead of the modifier letter apostrophe “ ’ ” in a word, the program will replace it with the modifier letter apostrophe “ ’ ”.

The following is a view of the text before the scan and after the scan is completed:

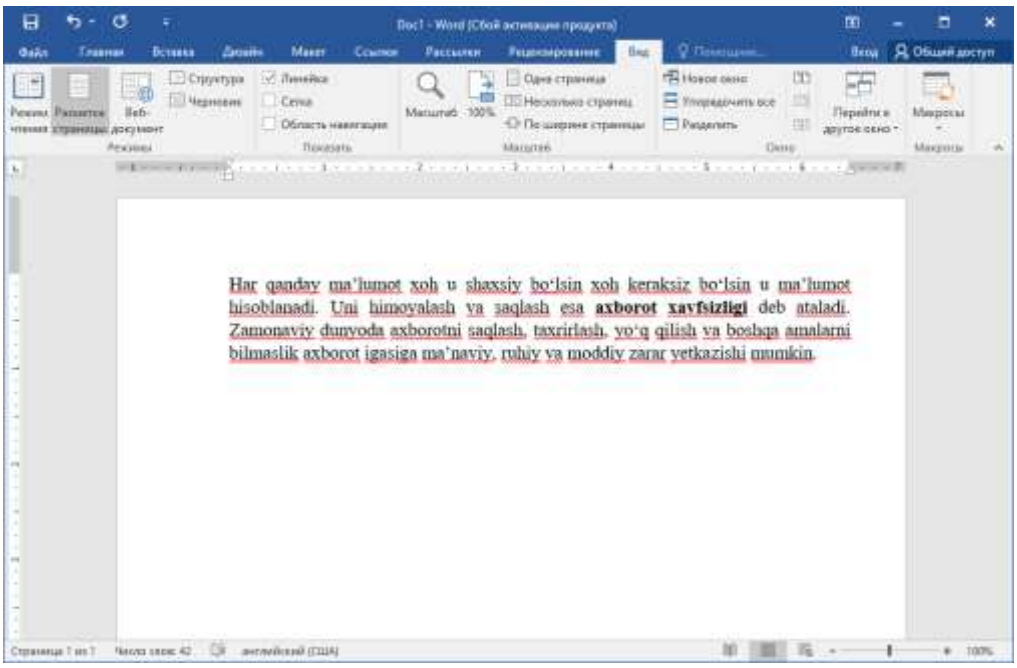

Figure-2. View of the text before the program starts

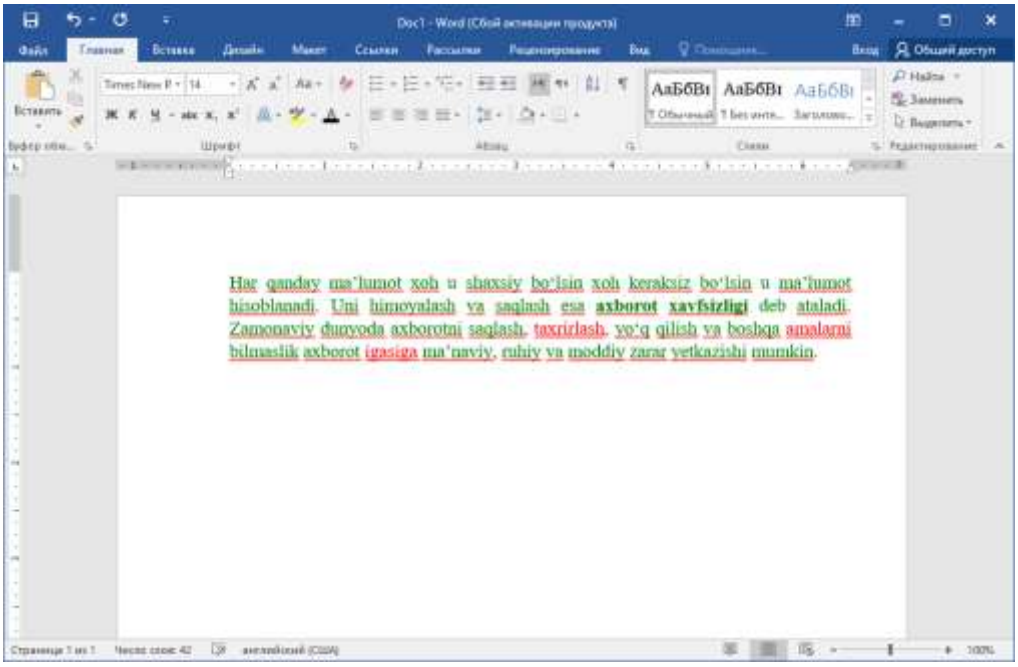

Figure-3. The appearance of the text after the start of the program

There are three misspelled words in the given text, and as shown in Figure b, the program marked the correct words in green and the incorrect words in red.

Conclusion

This software, which detects errors in Uzbek texts based on Latin script, can detect word errors relatively quickly using the above methods. This is due to the fact that the bases and suffixes in the words are placed in separate databases, the front and back suffixes of the word, and the base is checked separately. Dividing the base database into sections by letter, determining which letter the word starts with, and checking the word base that only starts with that letter can significantly increase performance. This is because there is no need to check for incorrect databases in this

case, which saves time. This software detects text errors, highlights correct words in green and incorrect words in red.

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COMPARATIVE STUDY OF THE MECHANICAL PROPERTIES OF WEAR-RESISTANT FOR WHITE CAST IRONS

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Annotasiya: Maqolada 280X29NL, 300X32N2M2TL va 330X17L markali yeyilishga bardoshli oq cho‘yanlarning mexanik xossalari taqqoslangan. Qotishmaning mexanik xossalarini oshirishning bir necha usullari tahlil qilingan. Ishlab chiqarish jarayonida qotishmaning mexanik xossalarining yuqori bo‘lishi, qotishmadan tayyorlangan detallarning ishlab chiqarish jarayonida uzoq vaqt davomida foydalanishi tahlil qilingan.

Kalit so‘zlar: ishqalanishga bardoshli cho‘yan, karbid, abraziv ishqalanish, oq yuqori xromli cho‘yan, ferroqotishma, struktura, kimyoviy tarkibi, karbid, mikrostruktura, karbid fazasi, ishqalanish, legirlovchi elementlar, zarbiy-abrazivli ishqalanish, korrozion-abrazivli ishqalanish.

Аннотация: В статье сравниваются механические свойства коррозионно-стойкого белого чугуна марок 280Х29НЛ, 300Х32Н2М2ТЛ и 330Х17Л. Проанализировано несколько методов улучшения механических свойств сплава. Проанализированы высокие механические свойства сплава в производственном процессе, длительное использование деталей из сплава в производственном процессе.

Ключевые слова: износостойкий чугун, карбид, абразивный износ, белый высокохромистый чугун, ферросплав, структура, химический состав, карбид, микроструктура, карбидная фаза, износ, легированные элементы, ударно-абразивный износ, коррозионно-абразивный износ.

Abstract: The article compares the mechanical properties of corrosion-resistant white cast iron grades 280X29NL, 300X32N2M2TL and 330X17L. Several methods for improving the mechanical properties of the alloy are analyzed. The high mechanical properties of the alloy in the production process, the long-term use of alloy parts in the production process are analyzed.

Key words: wear-resistant cast iron, carbide, abrasive wear, high-chromium white cast iron, ferroalloy, structure, chemical composition, carbide, microstructure, carbide phase, abrasive wear, alloyed elements, impact abrasive wear, corrosive-abrasive wear.

Introduction. At present, the foundry of the Navoi Machine-Building Plant produces more than 120 tons per month of cast parts (castings) from high-chromium white cast iron. The largest proportion of castings are parts of equipment used for mining as rock crushers. An example of such a part is the “anvil” of a KEV 96 double-impact turbo crusher, cast from cast iron grade 280X29NL

Abrasive wear is typical for a large group of machines and equipment - excavators, loaders, mills for grinding ore, coal, cement, chutes, chutes, chutes, lining plates of bunkers and skips, slurry pumps and pipelines to them; centrifuges, classifiers, flotation machines, hydro cyclones, etc.

Mechanical engineering requires the use of materials that have not only increased strength properties - temporary resistance, conditional elastic limit and strength, but also other special properties, such as increased wear resistance, corrosion resistance, heat resistance, that is, properties that provide an increased service life of parts in a wide variety operating conditions. First of all, this refers to such classical materials as alloys of iron with carbon, including high-alloy cast irons, the scope of which is expanding from year to year [1-3].

The task of increasing the wear resistance of parts made of chromium cast irons is complex and includes the choice of the composition of wear-resistant cast iron depending on the operating conditions of the part, the determination of the technological parameters of casting, the development of the optimal casting mode [4]. The crystallization parameters of chromium cast irons affect the operational properties to a much greater extent. An increase in the cooling rate of the melt in the process of

crystallization and the use of the possibilities of directional solidification change the parameters of the structural components [5], in particular, for cast irons, this refers to such parameters as the size and relative position of the carbide structural components. Therefore, the determination of a rational technology for the manufacture of castings from chromium iron is of the same importance as the choice of the alloy composition. The point is that the composition of metallic systems determines their structure, which, in turn, determines the properties of alloys [6-7].

Research methods and materials used. Wear-resistant white cast irons 280X29NL, 300X32M2N2TL and 330X17L were chosen as the material under study. These cast irons are used for castings of mining and processing equipment operating under conditions of intense abrasive wear (feeding discs, substrates, plates for crushers).

Samples were cast into sand-metal molds to determine the mechanical properties of corrosion-resistant white cast iron (Fig. 1).

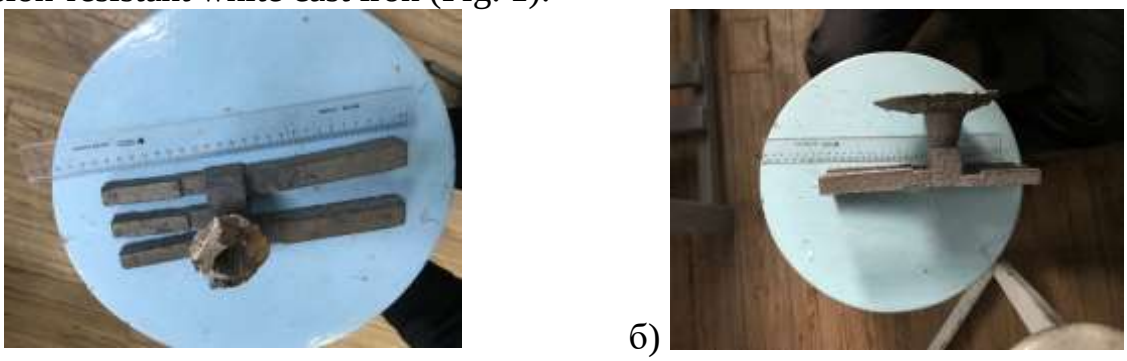

Figure 1. Samples prepared to determine the mechanical properties of corrosion-resistant white cast iron. a) cast into a sand mold, b) cast into a metal mold

To determine the mechanical properties of the alloy samples, we used a DM 80 Cormak electric discharge machine used at the Navoi Machine-Building Plant, manufactured in the USA on the basis of GOST 1497-84. (Fig. 2).

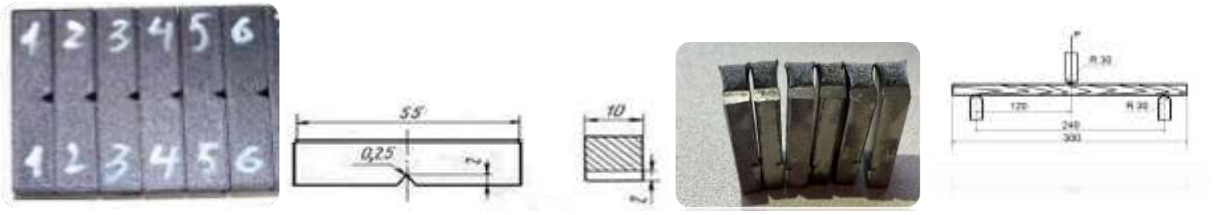

Figure 2. Samples prepared to determine the mechanical properties of the alloy, a) to determine impact strength, b) for tensile strength

For research, samples (Fig. 3.) were cast from white wear-resistant cast irons of grades 280X29NL and 300X32N2M2TL and 330X17L on an IChT-2.5 induction furnace (made in Russia).

Figure 3. Samples of white wear-resistant cast irons.
1 - 280X29NL, 2 - 300X32N2M2TL, 3 - 330X17L

To reveal the structure, the samples were etched with a reagent of the following composition: 15 ml of nitric acid, 15 ml of hydrochloric acid, and 15 ml of glycerol. The etching time is 10 minutes, at a reagent temperature of 60˚C [8-9].

To study the microstructure of the samples, they were studied using an OLYMPUS BX53 microscope. To measure HRC hardness, a TK-2M hardness tester was used, and to measure HV hardness, a PMT-3M hardness tester was used.

The chemical composition of castings prepared under industrial conditions was determined by the emission spectral method on the Spectro-Lab –M device (made in Germany).

Micro sections were prepared on a NERIS grinding and polishing machine (produced in Latvia). Grinding skins with a grain size of 180 to 1500 microns were used for grinding the samples. The surface of microsections was polished using ASM diamond paste with a grain size of 1/0, 2/1, and 3/2 [10-12].

Table 1. Compositions of cast irons intended for the manufacture of anvils

№	Cast iron grade	Content of chemical elements, % by weight							
		C	Si	Cr	Mo	Ni	Ti	P	S
1	330X17L	3,40	0,6	16,5	0,5	0,6	-	≤ 0,01	≤ 0,01
2	300X32H2M2TL	2,60	≤ 2,0	32,0	1,7	0,6	2,2	≤ 0,1	≤ 0,1
3	280X29HL	2,55	≤ 1,5	28,0	-	0,6	1	≤ 0,1	≤ 0,1

Samples of cast iron for testing were cast into earth molds. Wear resistance was studied in the dry friction mode. Chrome cast iron 330X17L was chosen as the most common wear-resistant cast iron in the Republic of Uzbekistan. Cast iron 300X32N2M2TL complex-alloyed with nickel, molybdenum and titanium has optimal mechanical properties, has proven itself in the mining industry, in particular, in the manufacture of the “anvil” part of the KEV 96 crusher. industry, in the manufacture of the "anvil" part of the KEV 96 crusher [13-15].

For the manufacture of alloys, an induction furnace with a volume of 2.5 tons was used, charge materials of the following composition: pig iron in the amount of 400 kg, ferrochrome (grade FKh 100A) 300 kg, nickel - from 1 to 2 kg, depending on the composition of the final alloy, ferromanganese - from 3 to 5 kg and electrocution up to 5 kg. The melting temperature was 1400 ˚C. The selected temperature exceeds the temperature of the complete transition of the alloy into a liquid state by 150 - 200 degrees. The casting temperature was 1380 ˚C, which was chosen on the basis of casting practice and in order to reduce the volume of complete casting shrinkage.

The cooling rate of the alloys during casting into the ground was 100 ˚C/minute, while casting into a metal mold 235 ˚C/minute. Refining of the alloys was not carried out, cleaning the surface of the melt from slags was carried out within 5-10 minutes after the melt temperature was lowered to the casting temperature. The mechanical properties of the alloys were determined according to GOST 1497-84. The structures of the alloys were studied on an OLYMPUS BX53 microscope at ×200, ×1000 magnifications.

Research results and their analysis. For the purpose of comparative analysis of the characteristics of cast irons of different grades intended for the manufacture of the part "feeding discs", the hardness of the finished part was determined. The HRC hardness test results are shown in table. 2. In this case, the Rockwell hardness was determined on the surface and core of the part, since its dimensions made it possible to assume the presence of a cooling rate gradient over the cross section of the part during crystallization. In parallel, the coefficient of relative wear resistance of the part was determined.

As an object of research, chemical elemental analysis, surface distribution and microstructural analysis of white cast irons 280X29NL, 300X32N2M2TL and 330X17L were performed. Special samples were made to determine the mechanical properties of white cast iron. To determine the bending strength of the samples, a universal testing machine GMS-50 was used, to determine the impact strength - an MK-30A pendulum, to determine the stiffness - a device for determining the stiffness TK-2M.

Table 2.

Mechanical properties of chrome cast irons (earthen casting).

Cast iron grades	Impact strength, KC_V, J / cm^2		Redistribution of bending strength, $\sigma_в$, MPa		Hardness, $HRC_Э$	
	Measured	According to GOST	Measured	According to GOST	Measured	According to GOST
280X29NL	10,9-11,2	11,1	398	405	43-44	46
300X32N2M2TL	9,7-9,8	9,8	432	441	56-57	55
330X17L	11-11,6	11,3	415	410	58-62	58

On samples cast with the use of casting coolers, an increase in wear resistance by 18-20% and a hardness of up to 55 HRC is observed in comparison with samples cast in earthen molds. A further increase in the wear resistance of parts made of chromium cast irons obtained with the use of casting coolers is possible due to the choice of optimal casting modes. It is known that the casting formation process using casting coolers is strongly influenced by such casting parameters as the temperature of the poured melt and the time of filling the mold with the melt. By changing these parameters, it is possible to influence the formation of the structure of the casting and, as a consequence, the wear resistance of the parts obtained. The study of the influence of these parameters was carried out in the manufacture of castings "feed discs" [4].

In fig. 2 shows the structure of cast iron 280X29NL from cast to earthen (a) and using a metal form (b) form, and in table. 2 shows the relative wear resistance of this

alloy obtained in different casting molds. The structure when casting with the use of a metal mold is crushed 1.5-2.0 times and the direction of the carbides is achieved.

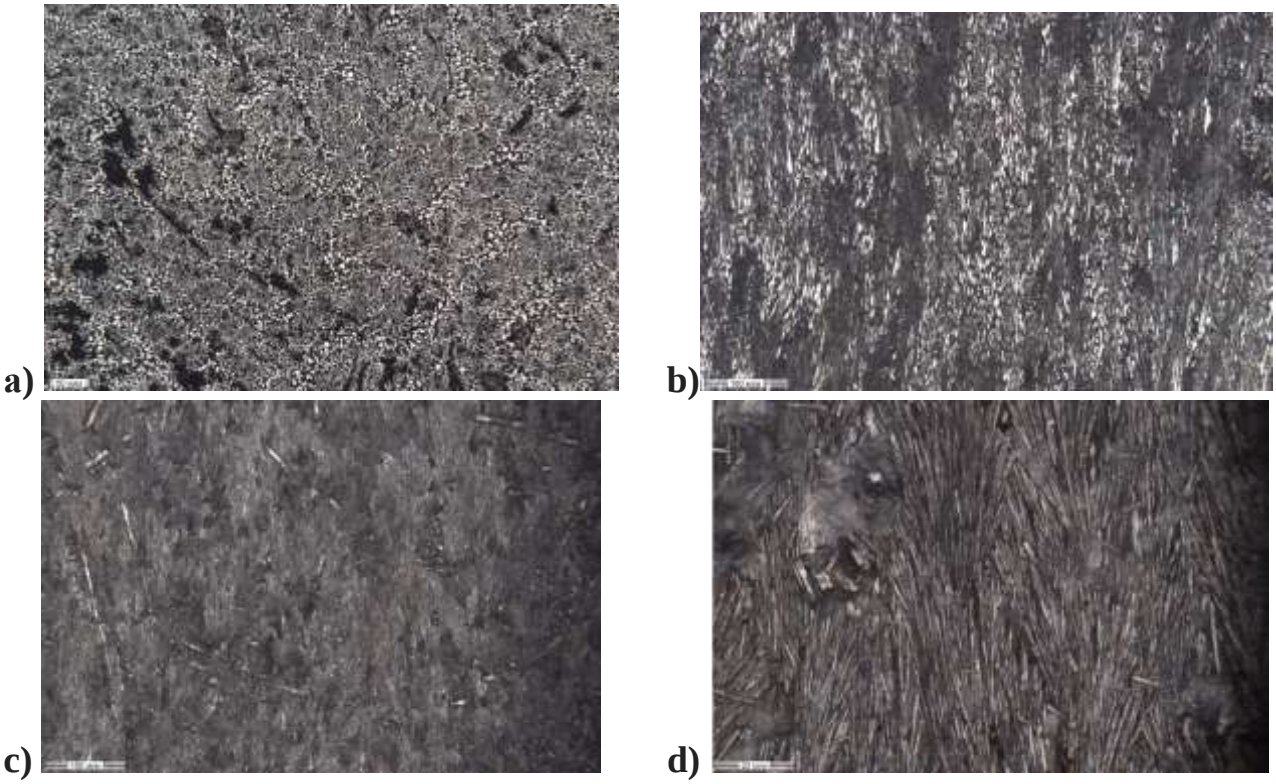

Fig.2. The structure of cast iron 330H17L:
a - casting into an earthen mold × 200; b - casting using a metal mold × 200.
c - casting into an earthen mold × 1000; d - casting using a metal mold × 1000.

Samples were cut from the parts to carry out an on-site wear test for the KEV 96 crusher. The upper (working) part was tested in the samples. In fig. 3 shows a detail of the “feed discs” of a model KEV 96 crusher and test specimens.

Fig.3. Crusher feed discs model KEV 96.

Tests in laboratory conditions have shown that alloying with chromium dramatically increases wear resistance. Cast iron additionally alloyed with nickel had the same wear resistance as that of the basic composition. When casting cast iron alloyed with chromium, the waste of this element was 40%, and the alloy had a low fluidity. Table 2 shows the surface hardness of castings alloyed with chromium and nickel, as well as the microhardness of the metal matrix.

Tests in laboratory conditions have shown that alloying with chromium dramatically increases wear resistance. Cast iron, additionally alloyed with nickel, had the same wear resistance as cast iron of the base composition. When casting cast iron alloyed with chromium, the loss of this element was 50%, and the alloy had low fluidity. In table. Figure 3 shows the surface hardness of castings alloyed with chromium and nickel, as well as the micro hardness of the metal matrix.

To determine the wear resistance of parts cast in an earthen mold and mold, tests were carried out at the production association "Navoi Machine-Building Plant" Navoi Mining and Metallurgical Combine.

Conclusions. A study of the wear resistance of white chromium cast irons: 280X29NL, 300X32N2M2TL and 330X17L showed that the most common cast iron 280X29NL in Navoi Mining and Metallurgical Combine is inferior in hardness and wear resistance to cast irons 330X17L, 300X32N2M2TL. An increase in wear resistance and a reduction in the cost of casting (compared to casting in earthen molds) is possible through the use of sparingly alloyed cast iron 330X17L and the use of metal casting molds. It is proposed to use cast iron grade 330X17L in the production of parts.

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RESEARCH ABOUT LOCAL GIN'S SAW CYLINDER

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Annotasiya. Ushbu maqolada paxta tozalash korxonalaridagi 3XDDM rusumli 86 arrali jinlarni 130 arrali 4DP-130 va 5DP-130 rusumli arrali jinlarga almashtirilishida jin ish unumdorligi sezilarli darajada oshmaganligi o‘rganilgan. Yuqori va past navli paxtani jinlashda 130 arrali jinlarning tola bo‘yicha haqiqiy ish

unumdorligi o‘rtacha 1200- 900 kg/soatni tashkil etib, texnik xarakteristikasidagi ish unumdorlikka qaraganda o‘rtacha 40- 45 % ga kam ekanligi aniqlangan. O‘tkazilgan tadqiqot ishlaridan 130 arrali jinlar uchun jinning ish unumdorligini oshiradigan, elektr energiyani tejaydigan, tebranishini kamaytiradigan takomillashtirilgan arrali silindrlarni ishlab chiqish kerakligi belgilab olingan.

Kalit so‘zlar: Arrali jin, ishchi kamera, arrali silindr, val, kolosnikli panjara, paxta, tola, chigit, ifloslik, tukdorlik, ish unumdorlik.

Аннотация. В данной статье изучено, что при замене на хлопкоочистительных предприятиях хлопкоочистительных пил 3ХДДМ тип 86 на 130 пильных пил 4ДП-130 и 5ДП-130 производительность джина существенно не увеличилась. При очистке хлопка высшего и низкого сортов реальная производительность 130 лесопильных заводов по волокну составляет в среднем 1200-900 кг/ч, и установлено, что она в среднем на 40-45% меньше, чем производительность в технических условиях. характеристики. В результате проведенной исследовательской работы определено, что необходимо разработать усовершенствованные пильные цилиндры на 130 пильных полотен, повышающие эффективность работы пилы, экономящие электроэнергию, снижающие вибрацию.

Ключевые слова. Пильный джин, рабочая камера, пильный цилиндр, вал, колосниковая сетка, хлопок, волокно, семян, грязь, ворсистость, производительность.

Annotation. In this article, it was studied that when cotton-cleaning saws 3XDDM type 86 were replaced at cotton-cleaning enterprises with 130 saws 4DP-130 and 5DP-130, the productivity of the gin did not increase significantly. When cleaning high and low grade cotton, the actual fiber capacity of 130 sawmills is 1200-900 kg/h on average, and it has been found that it is on average 40-45% less than the performance under technical conditions. characteristics. As a result of the research work, it was determined that it is necessary to develop improved saw cylinders for 130 saw blades, which increase the efficiency of the saw, save energy, and reduce vibration.

Keywords. Saw gin, working chamber, saw cylinder, shaft, grate, cotton, fiber, seed, dirt, hairiness, performance.

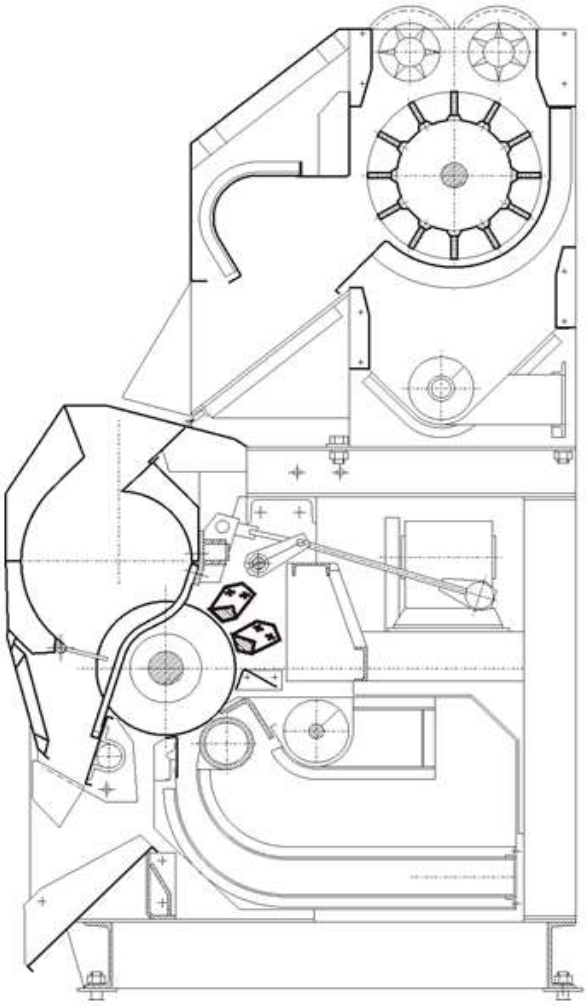
Introduction. Until the 1980s, 3XDD cotton gins were used first with 80 saws, and then 3XDDM with 86 saws [1]. At a single-battery cotton ginning enterprise, 4 pcs. 86 sawmills to obtain the required amount of fiber in accordance with the technological regulations. The large number of daemons in the technology has led to high operating costs and high power consumption [2].

In order to reduce costs and increase the productivity of the enterprise, by 1980, the DP-130 model with 130 saws was first developed, and later this model was improved and produced in the 4DP-130 and 5DP-130 models and became widespread. into production (Fig. 1) [3, 4]. These gins were made due to the increase in the number of saws on the shaft and the increase in the size of the gin. The chain saw cylinder consists of 130 saw blades and 129 saw blade spacers. The diameter of the assembly site of the saw is 100 mm, the length is 2240 mm, and the weight is 161.4 kg [5]. The mass of the saw cylinder assembly is 270.3 kg (Fig. 2).

Literature review. Test work carried out in the manufacture of 130 chainsaws Sawing efficiency per saw 3XDDM type sawing per saw In the operation of the saw cylinder, due to the length and weight of the saw cylinder, when it rotates at 730 rpm. there was an increase in the length of the cylinder. As a result, the saws on the shaft

were in contact with the top and bottom working portion of the columns in the columnar grid, causing the saw teeth to not move quickly. As a result, the saws had to be replaced before the required 72 hour period had elapsed [7]. Premature replacement of old saws led to overrun of imported saws. In addition, the rapid movement of the saws drastically reduced the process of extracting fiber from the seed in the raw wheel, resulting in a decrease in the productivity of the gin.

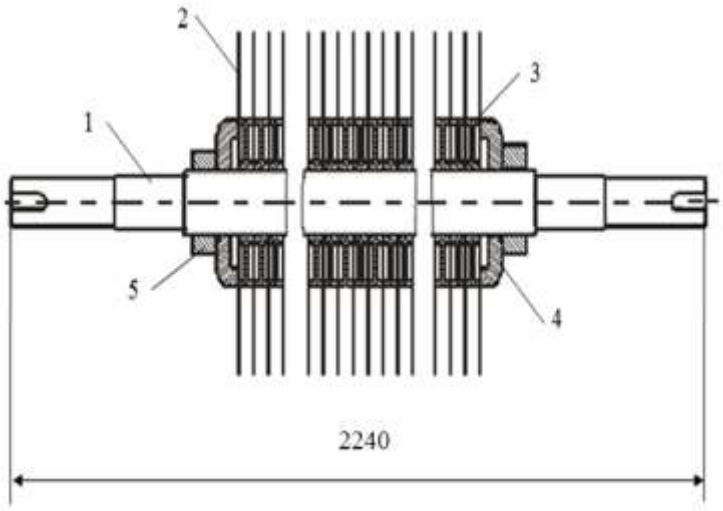
The operation of the saws touching the upper working part of the columns in the grid of columns led to an increase in the distance between the columns, and from this increased distance there were points of transition of the seed into the fiber. In order to eliminate these



1- feeder, 2- pile drum, 3- working chamber, 4- saw cylinder, 5- colosnik grid, 6- air chamber.

Figure 1. Schematic diagram of the 5DP-130 gin

conditions, t was necessary to replace the columns in advance. Premature replacement of the grate led to the overrun of the grate brought from abroad. In addition, due to increased vibrations in the saw cylinder, the bending of the shaft and the rapid bending of the sleeve at the bearing installation site made the shaft neck unusable.



1- shaft, 2- saw, 3- gasket between saws, 4- puck, 5- nut

Figure 2. Scheme of 5DP-130 gin's saw cylinder

In some cases, due to the magnitude of the vibration, the shaft broke, which made the shaft unusable [8]. At the same time, due to increased vibration, it was not possible to install the air chamber nozzle with the saw cylinder at the required distance of 1.5-2.0 mm. Instead of the required distance, it was necessary to set a distance of 2.5-3.0 mm. Increasing the distance between the saw cylinder and the air chamber from the required size made it impossible to completely separate the fibers from the saws in the cylinder and transport them to the fiber channel. Some of the fibers remaining on the saw teeth were glued to the bottom of the grid of the grate, and the rest of them returned to the working chamber with saws and were on the useful front surface of the saw teeth, which reduced the process of effective fiber trapping in the raw material shaft and separation from seeds.

I had to stop the gin often to clear the clogged lower part of the colossal grate. This gin resulted in reduced productivity and less fiber needed to be produced per day. The fact that the front of the saw tooth was not filled with the required amount of new fiber drastically reduced the performance of the gin [8].

Analysis of scientific works. In order to study the efficiency of the saw drum at 130 sawmills, research work was carried out at the sawmill 5DP-130 of the Mustakillik cotton gin in the Tashkent region. Before starting the research work, the weight of the saw cylinder in the gin was measured on an electron fiber scale in the press shop and amounted to 270.3 kg. It is known that according to the technical characteristics, an electric motor with a power of 75 kW, 730 rpm is installed on the cylinder shaft of the saw model 5DP-130. In the course of the research work, the load on the electric motor during the operation of the saw cylinder without load and with load, the efficiency of the gin on seeds and fibers during cotton cleaning, the quality of the resulting fiber and seeds were studied. The load on the electric motor rotating the saw cylinder was determined by an ammeter mounted on the electric motor.

Before operating the machine without load, all working parts in it were adjusted to the technical specifications, the distance between the saw cylinder and the seed comb was 30 mm, the distance between the saw cylinder and the air chamber was 1.5 mm,

and it was used without load. During operation, due to the vibration caused by the weight of the saw cylinder, it was observed that the saw teeth in the cylinder hit the air chamber nozzle. The same situation arose when the gap between the saw tooth and the nozzle in the saw cylinder was set to 2.0 mm. When installing an air chamber with a saw cylinder with a nozzle gap of 2.5 mm, there was no case of contact of the saw teeth on the cylinder with the nozzle, and studies were carried out in this gap. First, the power consumption of the saw cylinder without load was determined. At the same time, when measuring the current power consumed by the electric motor at the moment the saw cylinder was turned on, it amounted to (327 A), and when the saw cylinder was operating without load - (46 A) (Fig. 3, 4). Then, to test the use of gin with loading, studies were carried out on cotton II grade C-6524 with an initial moisture content of 10.6% and impurities of 5.4%. At the same time, the moisture content of cotton during cleaning was 8.4%, and its dirtiness was 1.2%.

Analysis and results. When cotton was fed into the working chamber and the raw material rotated in the chamber without clogging with the required density, the current strength was 134 A. The mass fraction of fiber defects and impurities after gin averaged 3.36%, seed hairiness - 10.44%. When determining the composition of seeds after cleaning by the degree of hairiness, uncleaned seeds (single-seeded cotton) have 4%, seeds with hairiness up to 8% - 7%, seeds with hairiness up to 10%. - 40%, seeds with pubescence up to 13% - 33%, 10% of seeds with pubescence up to 18% and 6% of seeds with pubescence up to 22% (Fig. 5). The performance of the gin was determined by the time method. At the same time, every 3 minutes, the seed produced from gin was collected, weighed, and the productivity of the seed was determined. Fiber productivity was determined by the number and weight of bales produced over a given period of time. In order for the results to be visual, the experimental work was repeated 9 times and the average value was obtained. At the same time, the productivity of gin in terms of seeds averaged 1987 kg/h, and in terms of fiber, an average of 1066 kg/h. During the ginning process, it was noticed that the air could not completely separate the fiber from the saw teeth in the separation zone due to the vibration generated by the saw cylinder and the air chamber nozzle at a distance of 2.5 mm. As a result, the partial fibers remaining on the saw teeth stuck to the bottom of the studs in the column grid. I had to stop the saw gin to clean the bottom of the cobs on the clay fence. This situation was repeatedly repeated

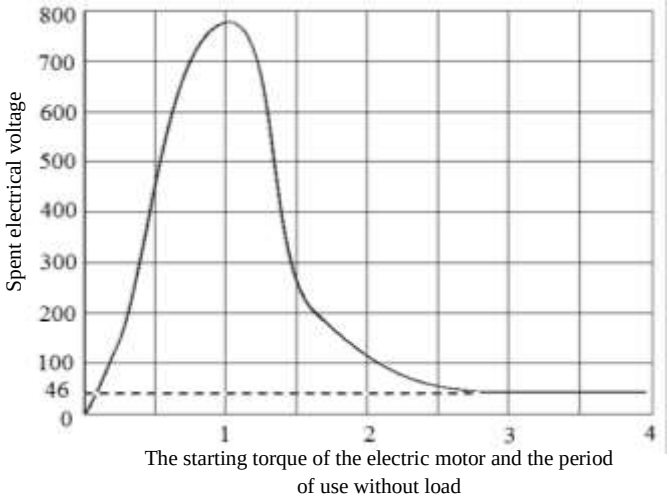


Figure 3. Current consumption for the moment of turning on the saw cylinder and the period of use without load

during the research work, and each time it was necessary to stop the gin and clear the rubble under the columns. Frequent stopping of the gin led to a change in the density of the raw material and negatively affected the uniform hairiness of the seeds coming out of the gin. In addition, the frequent shutdown of the gin showed a decrease in the plant's capacity for fiber and seeds, which must be produced daily.

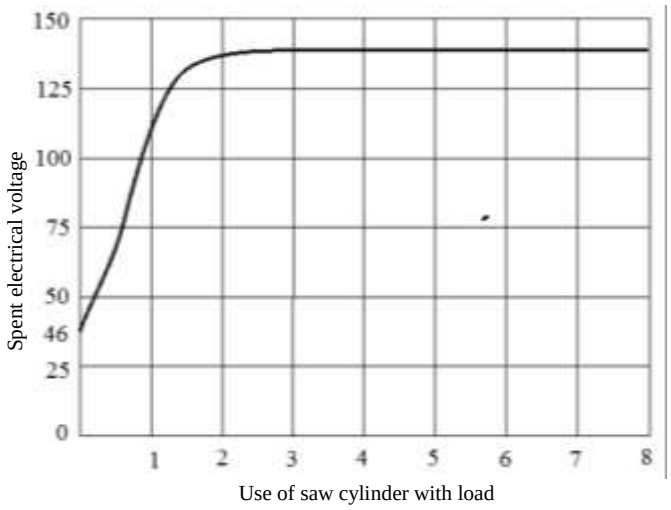


Figure 4. Power consumption when using a saw cylinder with a load

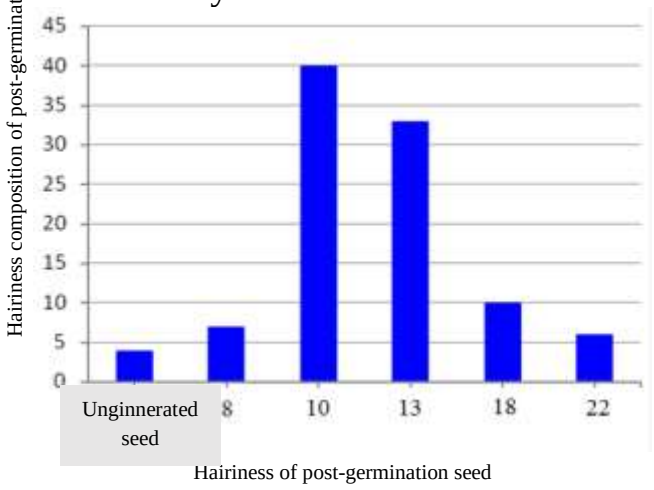


Figure 5. The composition of the post-germination seed according to the level of hairiness

Conclusion. Replacing 86 saws with 130 saws did not increase the genie's productivity by one saw, but reduced it by an average of 10%. Due to the weight of the saw cylinder, a 75 kW electric motor was used in the saw cylinder, resulting in a waste of electricity. When the cylinder rotates at a speed of 730 rpm, the vibrations are high, the shaft in the cylinder bends, the shaft bends, and in some cases the shaft becomes unusable due to shaft failure. The high vibration of the cylinder had a negative effect on the uniformity of seed hairiness after gin, and the clogging of the columns in the working chamber caused frequent stops of the gin and reduced the daily productivity of the gin. All this indicates the need to increase the productivity of sawmills, improve the quality of fiber and seeds after grinding and introduce them into sawmills.

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WAYS TO INCREASE CLEANING EFFICIENCY OF COTTON HEATING CLEANING EQUIPMENT

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Annatasiya. Maqolada paxta tolasini qizdirish evaziga tozalash samaradorligini oshirish bo‘yicha bajarilgan ishlar taxlili va issiq xavoning tezligini paxta tolasining xaroratini va namligini o‘zgarishiga ta'sirini aniqlash bo‘yicha tajriba natijalari keltirilgan. Natijada II-sanoat navli paxtalarning harorati 700S bo‘lganida namlikning o‘zgarishi 0,6 % dan 1,4 % gacha, IV-sanoat navida esa 1,8% dan 2,2 % gacha bo‘lishi aniqlandi.

Kalit so‘zlar. Tozalash, qizish, harorat, sanoat navli, mayda iflosliklar, namlik, tolaning harorati.

Аннотация. В статье представлен анализ проделанной работы по повышению эффективности очистки хлопкового волокна нагреванием и результаты опытов по определению влияния скорости горячего воздуха на изменение температуры и влажности хлопкового волокна. В результате было установлено изменение влажности от 0,6% до 1,4% при температуре хлопка II-технического сорта 700С, и от 1,8% до 2,2% у хлопка IV-технического сорта.

Ключевые слова. Очистка, нагрев, температура, технический сорт, мелкие примеси, влажность, температура волокна.

Annotation. The article presents an analysis of the work done to improve the efficiency of cleaning cotton fiber by heating and the results of experiments to determine the effect of hot air velocity on the change in temperature and humidity of the cotton fiber. As a result, a change in humidity was found from 0,6% to 1,4% at a temperature of technical sort II cotton of 700C, and from 1,8% to 2,2% for technical sort IV cotton.

Keywords. Cleaning, heating, temperature, technical sort, small impurities, humidity, fiber temperature.

Introduction. Based on the experience of many of our scientists, it has been concluded that heating cotton improves the separation of fine impurities adhering to the surface of the fiber.

On the basis of this, a SBO drum dryer with a cleaning section at cotton ginning plants was developed (Fig. 1), recommended for mass implementation. The appearance of the dryer SBO is similar to the dryer 2SB-10, and the dryer drum is closed by a chamber 3 m long, made of steel 2 mm thick, and has a cleaning section located 1 m from the place of cotton input. from the drum.

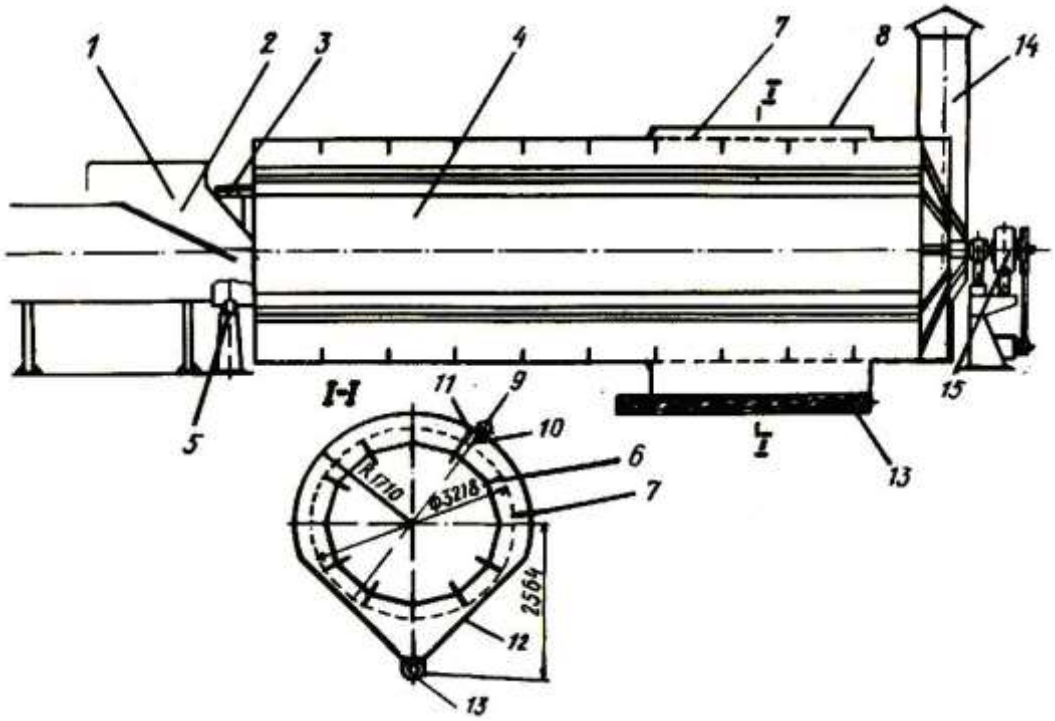

Figure 1. Scheme of the SBO dryer

1,2- supplier; 3- sapfa; 4- drum; 5- rollers; 6- shovels;
7- mesh surface; 8- shell; 9- pipe; 10- soplo; 11- metal brush; 12- bunker; 13- auger; 14- pipe; 15- reducer.

A dirt trap is installed at the bottom of the drum cleaning section to remove the separated fine dirt. In the upper part of the cleaning section, a pipe with a branch pipe is installed, through which the drying agent is directed to the cleaning of the drum. Drying chamber, drum cleaning section is equipped with a metal brush to clean the mesh surface. Inside the dryer there are 12 radially oriented blades with a height of 0.5 m. It is possible to increase the efficiency of cleaning from small impurities in the drum, but this leads to an increase in the consumption of the drying agent.

In the process of heating cotton, the physical and mechanical properties of the fiber can change, which also depends on the duration of the drying process, the temperature and the layer of cotton.

Processing cotton by heating has been used by humans since ancient times, when heating cotton on sheets effectively separated the fibers by hand.

Literature review. In the process of drying cotton, the heat of the fiber decreases until the moment of its transition to the cleaning process and does not exceed 25-30^{0}C [1]. In this case, the transfer of impact, given to the fiber by the piles of the cleaner drum, to small impurities increases, and the cleaning efficiency is directly proportional to the impact force transmitted to the fiber [2]. In the studies of Sadikov M. [3], the optimum temperature of the fiber during the drying process is 65-70^{0}C and the effect on the change in the appearance of the fiber is studied.

In the studies of Rozmetov R.I. [2] based on the experiment, as a result of studying the effect of changing the temperature of the cotton fiber on the speed of the drying agent, on the time the cotton is in the equipment, the hot air speed is 4.0; 5.5;

30 in turn when it increases to 7.0 m/s; 28; It was determined that the temperature of the cotton fiber rises to 48-500°C in 20 seconds. The cleaning efficiency, in turn, was 42.9-54.4%, and it was determined that increasing the hot air velocity from 2.5 m/s to 7.0 m/s accelerates the process of moisture evaporation in cotton.

Madumarov I.D. in his studies [4] determined that the efficiency of equipment cleaning is highest at a fiber temperature of 65-70^{0}C, and a humidity of 5.5-6.0%, but according to the conclusions of many scientists, humidity is 7-8% effective for sawing [5, 6, 7]. In further studies by I.D. Madumarov [8], the temperature of the cotton fiber in the technological process of cleaning cotton was recommended to be 45-50^{0}C, while it was assumed that the moisture content of cotton would be acceptable for the ginning process.

In all of the above studies, the effect of the cotton layer on heating has not been sufficiently studied; in our case, taking into account the transfer of cotton from the supply mine, cotton is located in a layer along the width of the mine and can be partially compacted.

Experiment method. To study the effect of cotton heating temperature on cleaning contamination and fiber performance, a feeder similar to that used in production was made on the upper part of the LKM mop, which was connected to an SXL-3 dryer to supply hot air to the feeder (Fig. 2).

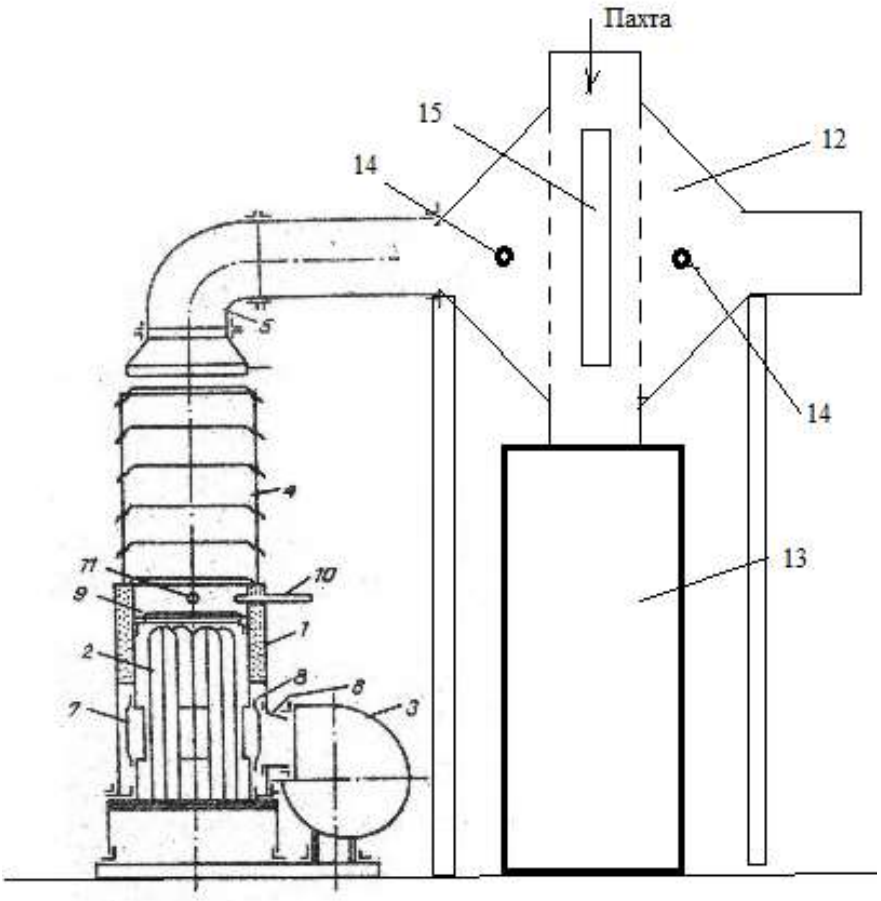

Figure 2. Scheme of the laboratory stand.

1 – SXL-3 dryer; 2 – elements of tubular electric heaters NB6 1.2/1.0; 3 - 2VR-2 fan; 4 - cassettes for placing samples of raw cotton; 5 - suction device; 6 - diffuser

from the fan; 7 - inner cylinder; 8 - slots; 9 - two-sided screen-like grid; 10-mercury thermometer; 11 - bimetallic thermal relay; 12-provider, 13-LKM laboratory cleaner; 14-mercury thermometer; 15- observation hole.

During the experiments, preliminary analyzes of raw cotton were carried out, in which the moisture content and dirtiness of cotton were determined. After setting the desired mode, cotton was weighed on electronic scales with an accuracy of 0.01 g; a total of 6 kg of cotton samples were taken. The resulting sample filled the supply shaft installed on the LKM device. Before taking the heat to the supplier, the heat is brought to a predetermined amount and the time indicator of the relay is recorded.

To increase the heating capacity of the SXL-3 drying equipment, additional automation was installed, and a mercury thermometer was used to measure the air temperature. The air temperature was measured in the hot air inlet and outlet pipes to the supplier.

At the end of the heating time, the supply of hot air was stopped, the heating temperature was measured with a non-contact thermometer from three places, opening the inspection hole of the mine, and a sample was taken from the mine to determine the humidity. The experiments were carried out in triplicate. To study the effect of air speed during the experiments, the speed of the passing air was changed by a given value.

The experiments were carried out with a change in air speed from 2.5 m/s to 6.5 m/s, temperature from 70^0C to 130^0C and the time spent by cotton in the equipment, depending on the performance of the equipment. In the course of the experiment, cotton fabric of the Bukhara-102 breeding variety, industrial grade II with an initial moisture content of 9.6%, an admixture of 8.2%, and an industrial grade IV with an initial moisture content of 14.6%, an admixture of 12.6%, were used. The experiments were carried out on a laboratory bench shown in Figure 2. The results of the experiment are presented in Table 1.

From Table. 1 shows that at a hot air speed of 2.5 m/s, the fiber temperature changes from 24^0C to 53^0C when the air temperature changes from 70^0C to 130^0C in technical grade II cotton, and the fiber temperature changes from 22^0C to 55^0C in technical grade IV.

Table 1

Effect of changing air speed and temperature on the temperature of cotton fiber

№	Hot air speed, m/s	Contact time, sec	Air temperature, ^{0}C	Heating temperature of cotton fiber, ^{0}C		Cotton moisture, %	
				industrial variety		industrial variety	
				II	IV	II	IV
1	2,5	11	70	24	22	9,0	12,8

			90	38	39	8,8	12,4
			110	45	43	8,1	12,0
			130	53	55	7,8	11,8
2	4,5	11	70	25	28	8,8	12,6
			90	44	42	8,1	12,2
			110	53	55	7,8	11,8
			130	56	58	7,2	11,6
3	6,5	11	70	28	26	8,2	12,4
			90	44	45	7,8	12,0
			110	56	55	7,2	11,6
			130	60	58	6,8	11,4

With an increase in the speed of hot air from 2.5 m/s to 6.5 m/s and a temperature of 110-130°C, we see that the temperature of the fiber reaches 56-60°C. We see that the moisture content of cotton varies depending on the speed of hot air, and the moisture content of technical type II cotton at 70°C ranges from 0.6% to 1.4%, and technical type IV - from 1.8% to 2.2%. definite.

Conclusion. From this we can conclude that an increase in the rate of passage of hot air through the cotton layer leads to a better removal of moisture from the cotton content and heating of the fiber. But it should be noted that an excessive increase in the speed of hot air can affect the movement of cotton. In continuation of the experiments, the dependences of the contact time with cotton, air velocity and thickness of the cotton layer, heating of the fiber, moisture absorption and cleaning efficiency are studied.

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STUDY OF THE MOVEMENT OF SEEDS BETWEEN THE TURNER BLADES AND THE SAW CYLINDER

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Annatatsiya. Ikki parallel plastinka o'rtasida urug' massasini siqish va siljitish modeli ko'rib chiqiladi. Bunday holda, qatlamning harakati statsionar deb qabul qilindi va silindr o'qiga perpendikulyar bo'lgan tekislikdagi muvozanat holatidan kichik og'ishlar ko'rib chiqildi. Aylanadigan qatlam qalinligining o'sishiga ta'sir qiluvchi bosimning pasayishi va kuchlanishning o'sishi darajasi aniqlanadi. Kauchuk qoplamaning qattiqlik koeffitsientining (N/m) turli qiymatlarida vaqti-vaqti bilan urug'larning arra tishlari bilan aloqa qilish yuzasining kesish kuchlanishini o'rganib chiqdi. Kesish kuchlanishining eng yuqori qiymati (160 Pa) $k = 5 \cdot 10^3 H/м$ dan $k = 25 \cdot 10^3 H/м$ gacha bo'lgan qattiqlik koeffitsientlarida raqamli usul bilan aniqlangan.

Kalit so'zlar: Linter, ish kamerasi, aralashtirgich, pichoq, arra tsilindri, urug'lar, tuklar, bosim, kuchlanish, qattiqlik koeffitsienti.

Аннотация. Рассмотрена модель сжатия и сдвига семенной массы между двумя параллельными пластинами. При этом движение слоя считалось стационарным и рассматривалось малые отклонения от состояния равновесия в плоскости, перпендикулярной к оси цилиндра. Определена, степень уменьшения давления и роста напряжения, влияющую на рост толщины вращающегося слоя. Изучена касательного напряжения $\sigma_{xy}(Па)$ поверхности контакте семян с зубьями пил от времени, при различных значениях коэффициента жесткости k (Н/м) резинового покрытия. Численным методом определена наибольшая

значения касательного напряжения (160 Па) при коэффициентах жесткости от $k = 5 \cdot 10^3 H/м$ до $k = 25 \cdot 10^3 H/м$.

Ключевые слова: Линтер, рабочая камера, ворошител, лопасть, пильный цилиндр, семена, линт, давления, напряжения, коэффициент жесткости.

Annotation. The model of compression and shift of the seed mass between two parallel plates is considered. In this case, the motion of the layer was assumed to be stationary and small deviations from the equilibrium state in the plane perpendicular to the axis of the cylinder were considered. The degree of pressure reduction and stress growth, which affects the growth of the thickness of the rotating layer, is determined. Studied shear stress $\sigma_{xy}(Па)$ surface contact of seeds with saw teeth from time to time, at different values of the coefficient of rigidity (N/m) of the rubber coating. Numerical method determined the highest value of shear stress (160 Па) with stiffness coefficients from $k = 5 \cdot 10^3 H/м$ before $k = 25 \cdot 10^3 H/м$.

Key words: Linter, working chamber, agitator, blade, saw cylinder, seeds, lint, pressure, stress, stiffness coefficient.

Introduction. The lintering process is carried out in the working chamber by the action of a rotating agitator and a saw cylinder on the seed mass, which forms a compacted seed roller. The teeth of the saws, penetrating the mass of the seed roller, scrape off the surface of the seeds of the lint and the downs and take them out of the grate with their subsequent removal from the teeth of the saws by air flow [1, 2].

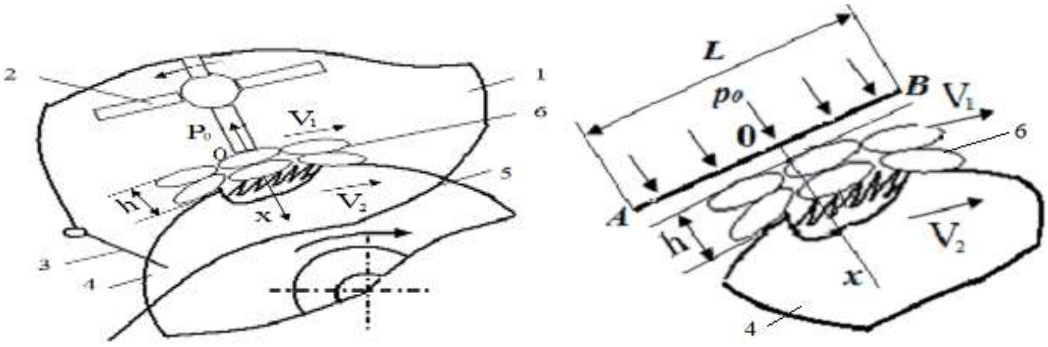
Consider a theoretical model of compression and shear of the seed mass between two parallel plates [3].

To describe the theoretical model, the movement of seeds in the contact zone between the blades of the agitator and the saw cylinder is presented as a mechanical system consisting of a very large number of randomly packed identical absolutely solid spherical particles. (pic. 1.a).

We study one-dimensional compaction with a shift of the seed package.

Consider a packing layer of thickness h, sandwiched between hard plate AB length L, массой m and the teeth of the drum, and on the plate from the side of the blade there is a uniform pressure p_0 and the plate is in contact with the package layer through an elastic element with a stiffness coefficient k (pic.1. b).

a) b)



1- working chamber; 2-rotator; 3 - seed comb;
4-saw cylinder; 5- grate; 6- layer of seeds

Pic. 1. Scheme of the movement of the seed mass in the contact zone between the blades of the agitator and the saw cylinder

Mass particles fill the layer and form a dense packing in it, i.e. such a packing, the volume concentration of particles in which cannot be reduced by infinitesimal displacements of their centers. They interact only through normal contact forces; friction forces are not taken into account in this condition. The particles of the lower boundary package do not leave the plate until a certain moment and move with it at a speed V_2 along the plane parallel to the layer boundary. In addition, we assume that the upper plate is elastically connected with the package particles moving at a constant speed V_1. Let's direct the axis ox perpendicular to the plane of the layer, and set the origin to the top plane of the layer. Consider the problem in the quasi-stationary formulation and denote by $u(x,t)$ и $v(x,t)$ respectively, the movement of the particles of the package along the axis and perpendicular to it [4]. The medium under consideration, in contrast to a dense continuous medium, has special properties. First, when deformed from the initial state (dense packing), it cannot reduce its volume. Secondly, if an infinitesimal shift occurs in the medium, then, due to purely geometric reasons (particles from a close-packed state to a loosely packed state), the shear generates loosening of the medium, resulting in a decrease in volume in the compressed packing. Therefore, the relative change in volume $\varepsilon_{xx} = \frac{du}{dx}$ is a net shift function $\varepsilon_{xy} = \frac{dv}{dx}$, according to work [5], define dependency:

$$\frac{du}{dx} = -\mu\left(\frac{dv}{dx}\right)^2 \qquad (1.1)$$

where: μ - dimensionless coefficient of layer compression, depending on the volume concentration of close packing and the geometry of the seeds relative to each other.

The equations of equilibrium and state of the package are written in the form

$$\frac{d\sigma_x}{dx} + \rho g x = 0,\ \frac{d\sigma_{xy}}{dx} = 0 \qquad (1.2)$$

The dependences between stresses and strains have the form

$$\sigma_x = -p(1 - 2\mu\frac{du}{dx}) \quad \sigma_{xy} = 2\mu p\frac{dv}{dx} \qquad (1.3)$$

Longitudinal stress, taking into account (1.1), takes the form

$$\sigma_x = -p[1 + 2\mu^2(\frac{dv}{dx})^2] \qquad (1.4)$$

Equations (1.2), if dependence (1.1) is taken into account, contain two unknowns $p(x,t)$, $v(x,t)$ and are integrated under the following boundary conditions ($P_0 = p_o L$)

$$m\ddot{u}_0 = P_0 - k[u_0 + (\mu\frac{\partial v(0,t)}{\partial x})^2],\ v = V_1 t \ \text{ at } \ x = 0 \qquad (1.5)$$

$$p = k(u_0 + (\mu \frac{\partial v(h,t)}{\partial x})^2], \quad v = V_2 t \text{ at } x = h \qquad (1.6)$$

Finding features $p(x,t)$, $v(x,t)$, satisfying equations (1.2) and boundary conditions (1.5) and (1.6) is difficult, and therefore we accept the following additional conditions

$$\mu^2 (\frac{\partial v}{\partial x})^2 \approx 0, \ \rho g h \approx 0$$

Then the conditions (1.5) and (1.6) take the form

$$m\ddot{u}_0 = P_0 - ku_0], \ v = V_1 t \text{ at } x = 0 \qquad (1.7)$$

$$p = ku_0, \quad v = V_2 t \text{ at } x = h,$$

(1.8)

The solution of the first equation from (1.7) under zero initial conditions has the form

$$u_0 = \frac{P_0}{k}(1 - \cos \omega t)$$

The solution of the first equation from (1.2) satisfying condition (1.8) has the form

$$p = p_0(1 - \cos \omega t)$$

(1.9)

Deformation $\frac{\partial v}{\partial x}$ according to the second condition (1.2), we represent it in the form

$$v = \xi V_2 t + (1 - \xi) V_1 t$$

(1.10)

here $\xi = x / h$,

Shear stress σ_{xy} calculated by the formula

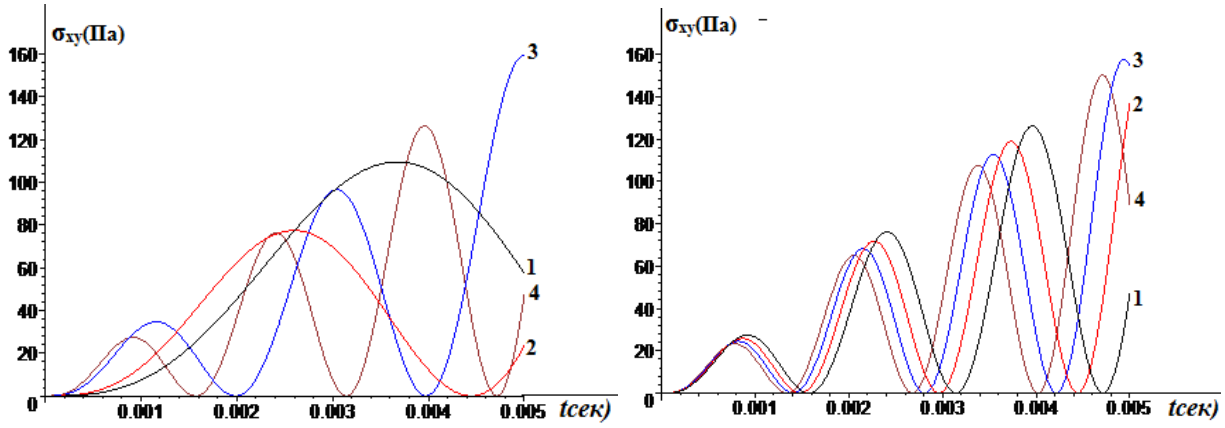
$$\sigma_{xy} = 2\mu p \frac{dv}{dx} = 2\mu p_0 (1 - \cos \omega t)(V_2 - V_1)t$$

It is assumed in the calculations $L = 0.006$м, $h = 0.01м$, $V_1 = 8$м/с, $V_2 = 12$м/с, $p_0 = 100Па$, $m = 0.005кг$

Time of passage of seeds through the teeth $t_0 = L/(V_2 - V_1) = 0.0015$сек

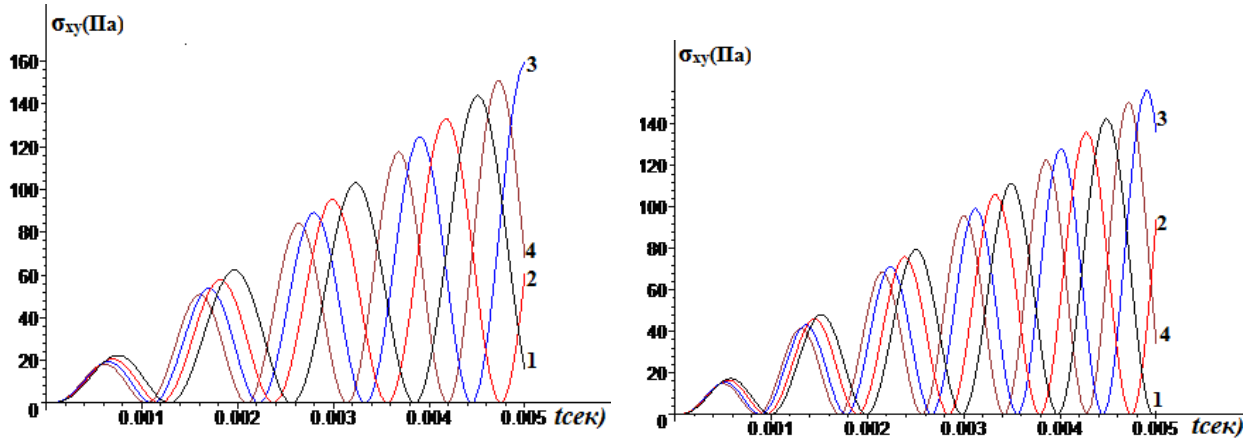
Figure 2 shows the dependencies of shear stress $\sigma_{xy}(Па)$ surface contact of seeds with saw teeth from time to time at different values of the coefficient of rigidity (N/m) of the rubber coating. An increase in this tension to the limit leads to an improvement in the scraping of the lint from the surface of the seeds.

It can be seen from the graphs that the highest value (160 Па) this force is achieved at stiffness coefficients (curves 3) $k = 5 \cdot 10^3 H/м$, $k = 10 \cdot 10^3 H/м$, $k = 15 \cdot 10^3 H/м$, $k = 25 \cdot 10^3 H/м$. This pattern can be used when selecting the type of rubber.



$1-k=5*10^3, 2-k=10^4,\ 3-k=5*10^4,$
$4-k=8*10^4$

$1-k=8*10^3, 2-k=10^4,\ 3-k=10*10^4,$
$4-k=12*10^4$



$1-k=12*10^4, 2-k=13*10^4,\ 3-k=15*10^4,$
$4-k=18*10^4$

$1-k=2*10^5, 2-k=2.210^5, 3-k=2.5*10^5,$
$4-k=2.7*10^5$

Rice. 2. Dependences of shear stress $\sigma_{xy}(Па)$ surface contact of seeds with saw teeth from time to time, at different values of the coefficient of rigidity (N/m) of the rubber coating.

Conclusions:

1. Studied the compression and shear of the seed mass between two rotating organs during the scraping of the lint from the surface of the seeds in a stationary mode.

2. Determined uniform pressure action p_0 on the side of the agitator blade, contacting with the layer of seeds through an elastic element with a stiffness coefficient .

3. It is determined that the largest values of shear stress $\sigma_{xy}=160Па$ achieved with stiffness coefficients $k=5\cdot10^3 Н/м$, $k=10\cdot10^3 Н/м$, $k=15\cdot10^3 Н/м$ и $k=25\cdot10^3 Н/м$.

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THE USAGE OF REINFORCEMENT LEARNING ALGORITHMS AND HMM IN GAMES.

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Annotatsiya: Ushbu maqolada mustahkamlashni o'rganish algoritmlari va Markov xususiyati tahlil qilinadi. Bu savolga javob berish uchun taniqli TicTacToe o'yini tanlandi va model turli vaziyatlarda o'ynaldi. Model SARSA va HMM mustahkamlashni o'rganish algoritmlariga asoslangan. Bir nechta tajribalarni o'tkazgandan so'ng, modelning eng yaxshi va tasodifiy rejimlari o'qitish uchun bir xil darajada muhim deb hisoblanganligi aniqlandi. Model eng yaxshi variantlarni tanlashda ajoyib o'ynasa-da, tasodifiy harakatlar o'z ahamiyatini yo'qotmaydi.
Kalit so'zlar: Yashirin Markov modellari, ehtimollik, TicTacToe, mustahkamlashni o'rganish, Markov zanjirlari, agent, muhit, holat.
Аннотация: В этой статье анализируются алгоритмы обучения с подкреплением и марковское свойство. Для ответа на этот вопрос была выбрана известная игра TicTacToe, и модель разыгрывалась в различных ситуациях. Модель основана на алгоритмах обучения с подкреплением SARSA и HMM. После проведения нескольких экспериментов установлено, что наилучший и случайный режимы модели считались одинаково важными для обучения. Хотя модель отлично играет при выборе лучших доступных вариантов, случайные ходы не теряют своей важности.
Ключевые слова: скрытые марковские модели, вероятность, TicTacToe, обучение с подкреплением, цепи Маркова, агент, среда, состояние.

Abstract: This paper analyzes reinforcement learning algorithms and Markov property. To answer this question well-known game TicTacToe had been chosen and the model was played in different situations. The model is based on reinforcement learning algorithms SARSA and HMM. After performing several experiments, it is found that the model's best and random modes were considered equally important for training. Although the model plays excellent when choosing the best available options, random moves do not lose their importance.

Keywords*: Hidden Markov Models, Probability, TicTacToe, Reinforcement Learning, Markov Chains, agent, environment, state.*

Introduction

In reinforcement learning[1], an agent interacts with its environment. At each time step, the agent will get some representation of the environment. Then, the agent selects an action to take. The environment is then transitioned into a new state and the agent is given a reward as a consequence of the previous action.

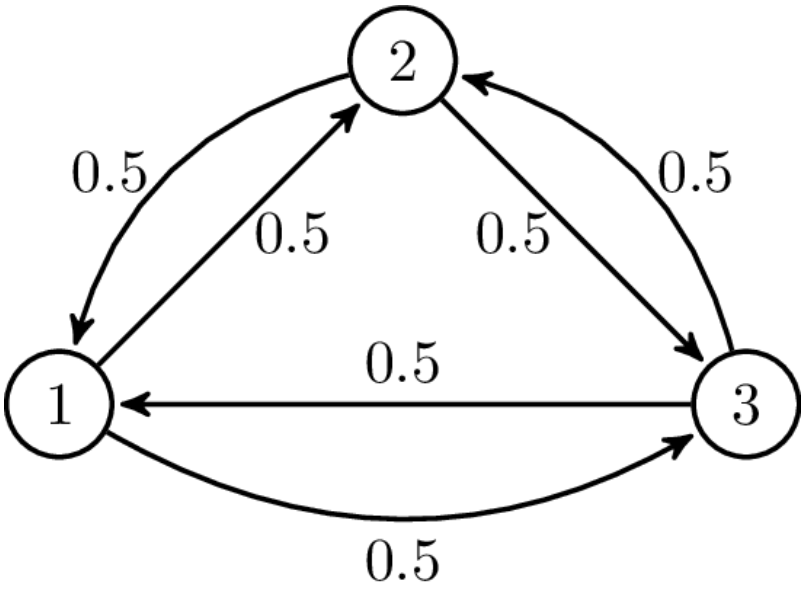
Any RL task can be defined with the following components[2]:

- The agent or the learner
- The environment the agent interacts with
- The policy that the agent follows to take actions
- The reward signal that the agent observes upon taking actions

There are some reinforcement learning algorithms. These algorithms have different approaches based on their environments[3]:

- State-action-reward-state-action (SARSA)[4]. This reinforcement learning algorithm starts by giving the agent what's known as a policy. The policy is essentially a probability that tells it the odds of certain actions resulting in rewards, or beneficial states.
- Q-learning[5]. This approach to reinforcement learning takes the opposite approach. The agent receives no policy, meaning its exploration of its environment is more self-directed.
- Deep Q-Networks[5]. These algorithms utilize neural networks in addition to reinforcement learning techniques. They utilize the self-directed environment exploration of reinforcement learning. Future actions are based on a random sample of past beneficial actions learned by the neural network.

Materials and Method Markov Chain. Markov Chains[6] claim that the future depends on the present, not on the past. A Markov Chain is a probabilistic model that represents this approach. A Markov Chain can be illustrated as a diagram below:



1-Pic. The illustration of Markov Chain

In this picture points (1,2,3) are considered as states which the model will choose and directions describe the probability of moving from one point to another. In this case, the probability of moving from each point to another is 0.5. Also, here it can be seen that, there is no cases which the model remains in the same state. For example, there is no direction from point '2' to point '2'.

Markov Decision Process (MDP)

Markov Decision Process[7] is a mathematical framework for modeling decision making situations. Markov Decision Process is an extension of Markov Chains.

A MDP is completely defined with 4 elements[8]:

- A set of states(S) the agent can be in.
- A set of actions (A) that can be performed by an agent to move from one state to another.
- A set of transition probabilities ($\boldsymbol{P^{a}_{ss'}}$), which define the probability of moving from state s to state s' by performing action a.
- A set of reward probabilities ($\boldsymbol{R^{a}_{ss'}}$), which defines the probability of a reward acquired for moving from state s to state s' by performing action a.

Hidden Markov Model

Hidden Markov Model (HMM)[9] is a statistical Markov model in which the system being modeled is assumed to be a Markov process with unobservable (i.e. hidden) states.

In simpler Markov models (like a Markov chain), the state is directly visible to the observer, and therefore the state transition probabilities are the only parameters, while in the hidden Markov model, the state is not directly visible, but the output (in the form of data or "token" in the following), dependent on the state, is visible. Each state has a probability distribution over the possible output tokens. Therefore, the sequence of tokens generated by an HMM gives some information about the sequence of states; this is also known as pattern theory.

Results

Agents are trained using a mixed approach:

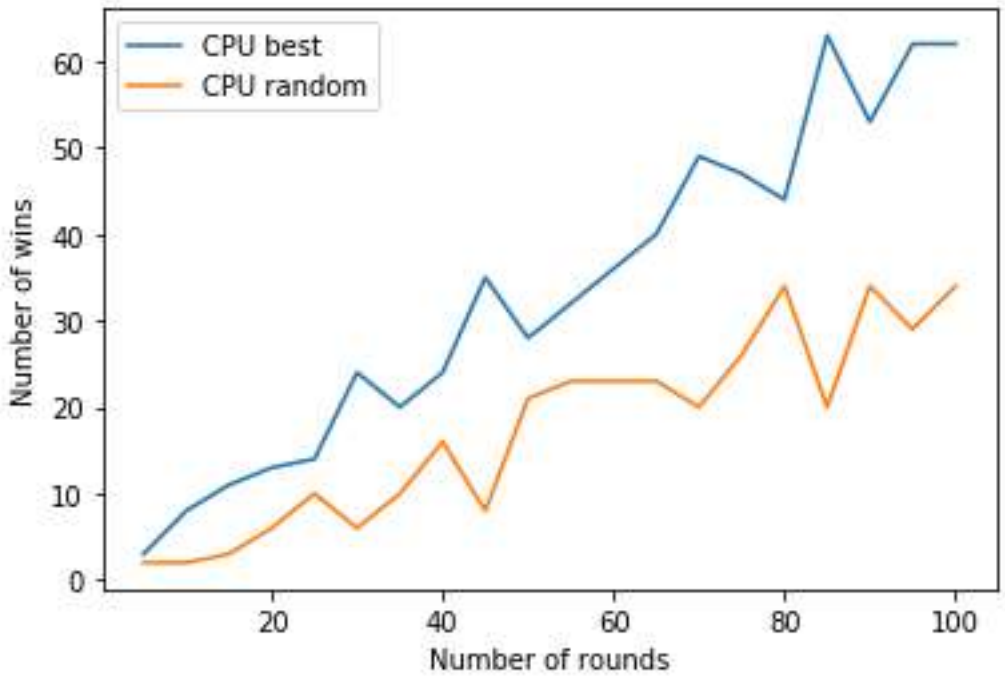
- First, an agent is trained playing against itself with random moves.

- Then, the agent is trained playing against itself with the best moves it learnt.
- Finally, the agent is trained playing against itself but this time it choses both random and best moves.

The obversation was made with the popular game TicTacToe[2]. In this game, there are 2 players (in this case they are human vs human, human vs CPU and CPU vs CPU) and each player has its own sigh (o or x). The player wins when it has 3 signs in horizontal or vertical or diagonal lines in 3x3 board.
The CPU player has been trained with HMM. It has 2 ways of playing namely random and best. In random mode, CPU chooses a random cell from all available places while in best mode, it tries to choose the best option which increases the probability of winning.
In training process, the model learns different ways through playing the game with itself. There are weigths for CPU player which is calculated in every step. These weights depend on the reward which the model gets after the performance. There are 3 types of reward:

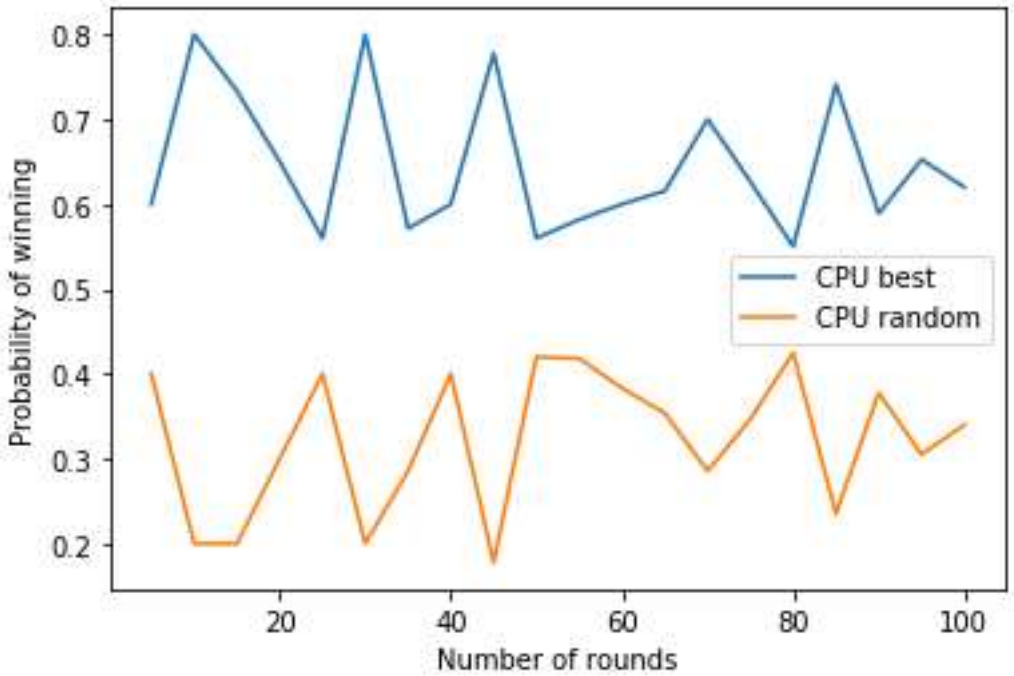
- Positive reward (when there is a win)
- Negative reward (when there is a lose)
- Less positive reward (when there is a tie)

The formula behind these rewards:
Win : $e^{-(i+1)} * lr$, where i – is an index, lr – is a learning rate for the model.
Lose: $-e^{-(i+1)} * lr/2$
Tie: $-e^{-(i+1)} * lr/10$
Learning rate of the model is by default – 10% which can be changed during the training process.
There are 2 pretrained weights with a 10 times difference in the number of iterations. The metrics in these collection which are been used as datasets are exploration iterations, exploitation iterations and exploitation exploration iterations. In exploration iterations the models perform random choices among possible options, in exploitation models choose the best options and in exploitation exploration iterations one of the models chooses random moves while another picks the best moves.
When CPUs play with first pre-trained weight following results gained.
1. The game was played between two CPUs which the former played with best available options whereas the latter played with random moves:



2- Pic. Comparison of a number of wins.

The line graph illustrates CPU with the best choices always beats the CPU which moves randomly. Although the difference can be clearly seen, it fluctuates randomly because the second player moves randomly. In this graph, the y-axis is the number of wins and the x-axis is the number of rounds. A blue line is a CPU player who plays with the best moves while an orange line is a CPU player who chooses random moves to win. In each iteration, the number of rounds increased by 5 and in the first iteration, the number of rounds was 5 in which the player with the best moves won 3 times and lost 2 times.

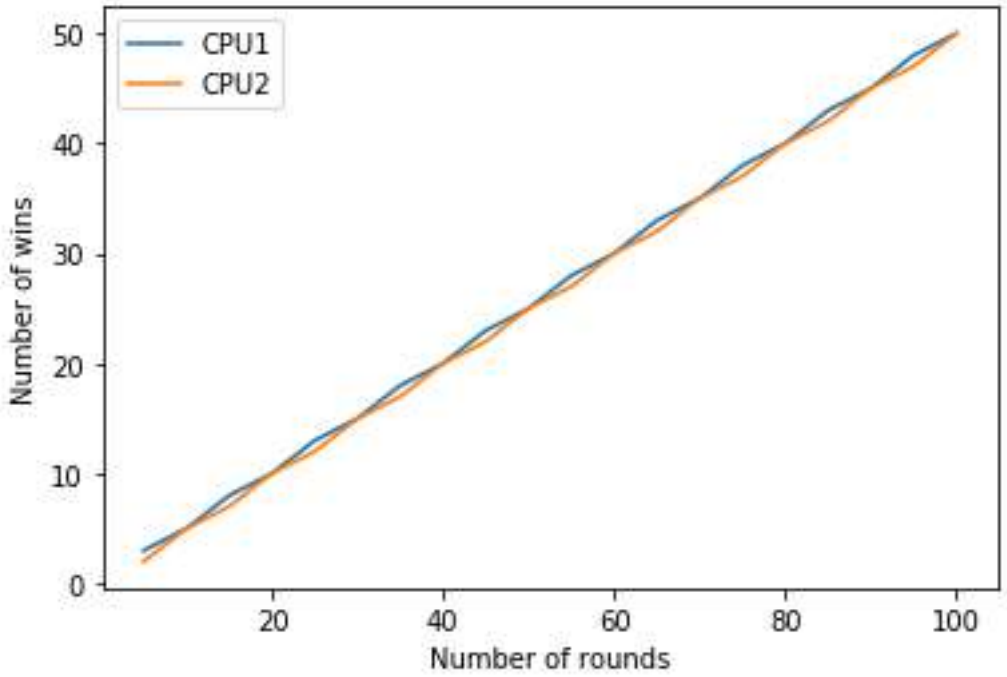


3 – Pic. The probability of winning players.

This graph represents the probability of winning for each player where CPU1 (best) has always a higher probability than 50 percent. In this graph, the y-axis is the

probability of winning, and the x-axis number of rounds. The lines could be strictly symmetric but they did not. The reason for this is in some rounds game ended with a tie. Additionally, on average the probability of winning for CPU1 (best moves) is around 64.65 % and for CPU2 (random moves) the number accounted for 32.27 %. The probability of the game ending with a tie is 3.08 %.

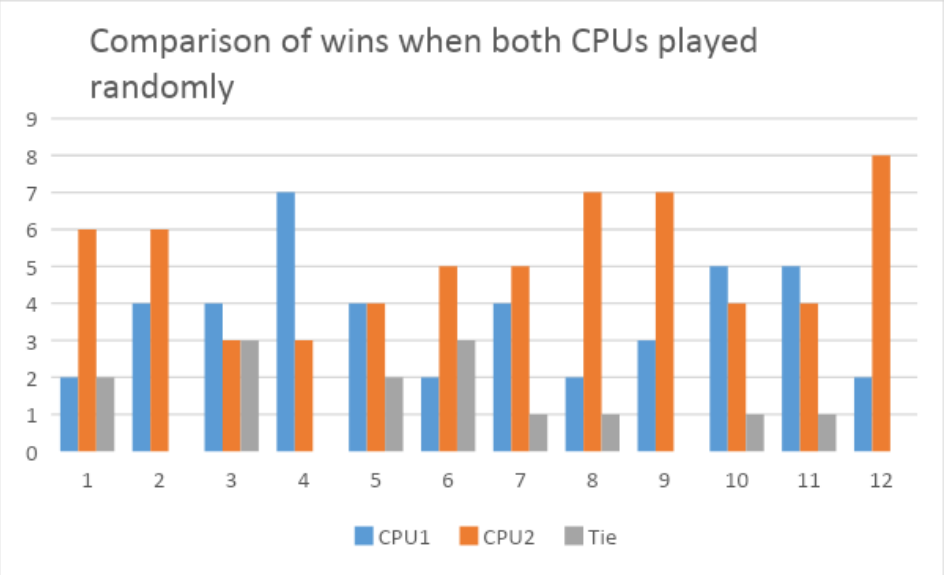
2. The game was played between 2 CPUs where both played with the best moves. Depending on the number of rounds there were only ties or Player 1 won in the last game. During the rounds, players won one by one because players began the game one after the other. The winner was the player who began the game.



3 – Pic. Comparison of wins when both players play with best moves

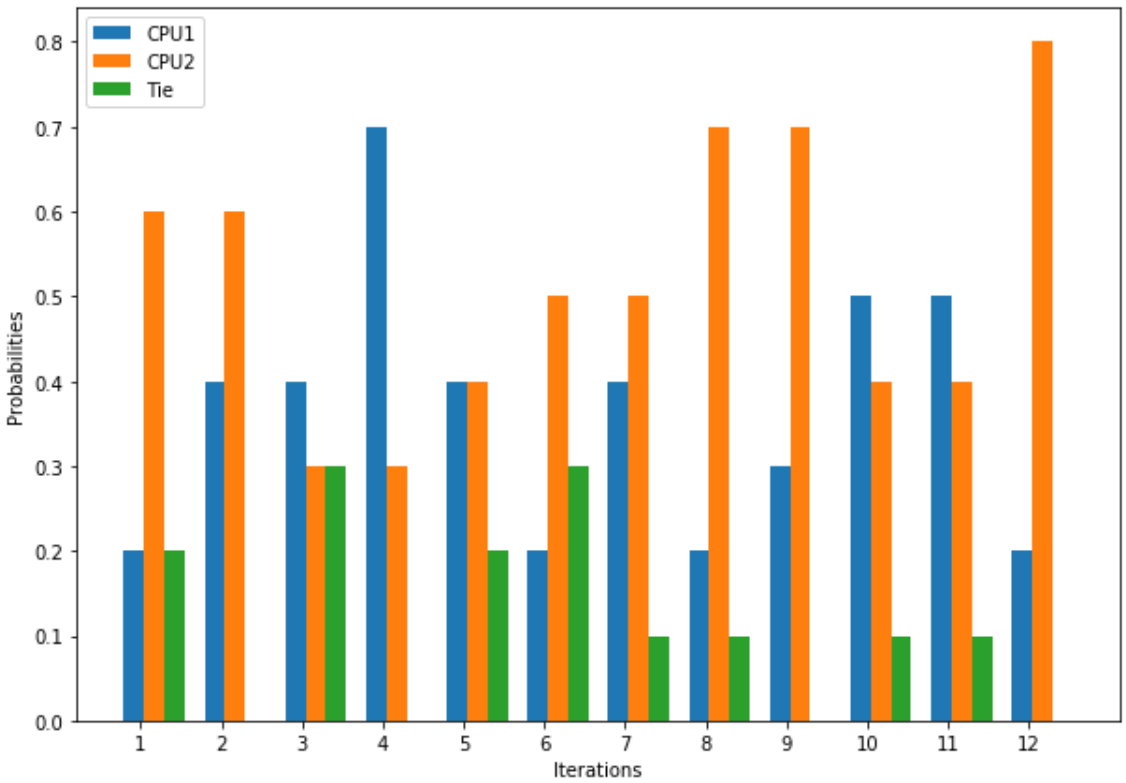
The above graph shows number of wins when both CPU choose the best options to move. The y-axis is the number of wins and x- axis is number of rounds. The CPU1 is the blue line whereas the CPU2 is orange line. The CPU1 has a little advantage because when the number of rounds is odd, the CPU1 is going to win in the last round.

3. The game was played between 2 CPU where both played randomly.



3 – Pic. Comparison of wins.

In this bar chart the blue bars are the number of wins for CPU1 and the orange ones for CPU2 while violet when the game was a tie. The numbers in the x- axis is iteration numbers, whilst y-axis represents the number of wins in each iteration. When both players choose random moves the result can be quite various. It can be seen from the bar chart that the probability of winning for CPU 2 is equal to 7/12 (58.3 %) and for CPU 1 this number is 4/12 (33.3 %). In the 5th sample both players won 4 times and there were 2 ties. In each iteration CPUs played 10 rounds and in the last iteration the score was **CPU1** 2 – 8 **CPU2**



4-Pic. The probability of winning when both players choose random moves.

The above graph shows the probability of the game. In this graph each color represents one of the players and green color shows the probability of getting a tie

in the game. There were 12 iterations where in 4 of them one of the players won in every round. In other words a tie would not happen. The probability of one of the players will win the game is around 88,3 %. This number is calculated with below formula:

$$P\ (not\ getting\ a\ tie) = 1 - average(P(getting\ a\ tie))$$

Conclusion

In conclusion, reinforcement learning has some algorithms and in this article SARSA[4] was used. Additionally, to this algorithms Hidden Markov Models and Markov Chains are studied with the basis of the game called TicTacToe. The model is constructed and trained based on aforementioned algorithms. While exploring the model it has been found that with finite number of outcomes the model can perform quite well. When the model plays with the best moves, it becomes quite clever and most of the cases, wins the game. However, if model chooses the moves in a random mode, it may fail to win consequently. The gained results shows that while training the model it is mandatory to use both ways of playing since playing randomly helps the model to explore the environment whereas moving with best options improves exploitation process. When it comes to play, it became quite obvious that playing in the best mode is far more efficient when it compared with random mode.

The next step of the research can be focusing on playing with a human which may not be enough to use the best mode because using random move might become slightly effective during a game.

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UDC: 004.9

LEAGUE OF LEGENDS DATASET ANALYSIS AND COMPARISONS OF THE DECISION TREE AND RANDOM FOREST.

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Annotatsiya: Ushbu maqola "League of Legends" deb nomlangan strategik o'yinning ma'lumotlar to'plamini tahlil qiladi. Tahlil davomida ma'lumotlar to'plamining korrelyatsiyasi taqdim etildi. Shuningdek, qaror daraxti va tasodifiy o'rmon kabi mashinani o'rganish algoritmlari o'rganildi. Barcha tahlildan so'ng, yuqoridagi algoritmlar asosida bashorat qilish modeli yaratildi. Model bergan natijalar juda qiziq edi. Qaror daraxtlari va tasodifiy o'rmon tasniflagichlari o'rtasida taqqoslashlar o'tkazildi.

Kalit so'zlar: Qaror daraxti, Tasodifiy o'rmon, nazorat ostida o'rganish, regressiya, tasnif, mashinani o'rganish, video o'yinlar, afsonalar ligasi, ma'lumotlarni tahlil qilish.

Аннотация: В этой статье будет проанализирован набор данных стратегической игры под названием «League of Legends». В ходе анализа были предоставлены корреляции набора данных. Также изучались алгоритмы машинного обучения, такие как дерево решений и случайный лес. После всего анализа была создана прогнозная модель на основе вышеуказанных алгоритмов. Результаты, которые дала модель, были довольно интересными. Были проведены сравнения между деревьями решений и классификаторами случайного леса.

Ключевые слова: дерево решений, случайный лес, обучение с учителем, регрессия, классификация, машинное обучение, видеоигры, лига легенд, анализ данных.

Abstract: This paper is going to analyze the dataset of a strategic game called ‘League of Legends. During the analysis correlations of the dataset were provided. Also supervised machine learning algorithms such as decision tree and random forest studied. After all analysis prediction model was created based on above algorithms. The results that the model gave were quite interesting. Comparisons were made between decision trees and random forest classifiers.

Keywords: Decision tree, Random forest, supervised learning, regression, classification, machine learning, video games, league of legends, data analysis.

Introduction : Decision Trees (DTs)[1] are a non-parametric supervised learning method used for classification and regression. The goal is to create a model

that predicts the value of a target variable by learning simple decision rules inferred from the data features. A tree can be seen as a piecewise constant approximation.

The decision tree divides the dataset with questions about the features and stores the connection depending on their answers of them. This process continues until all features are added as rules.

This algorithm works efficiently in both regression and classification problems.

If the model should predict or find numeric values, this problem is called a regression problem and if the outcome should be divided into some classes, it is called a classification problem.

There are some advantages and disadvantages of this algorithm.

Advantages:

- Preprocessing. During the pre-processing decision tree requires less effort when compared with other machine learning algorithms
- The decision tree does not require data normalization
- Data scaling is not necessary for the decision tree
- Missing the values in data does not affect to building of a decision tree

Disadvantages:

- Small data changes might have an impact on the structure of the tree
- Calculations can become far more complex compared to other algorithms
- Decision tree might be time-consuming during training
- A decision tree might not suit well to regression and predicting continuous values

The decision tree algorithm picks a column in the data depending on the entropy of the columns.

Entropy[2] - is the randomness of the system. It is a measure of node purity or impurity.

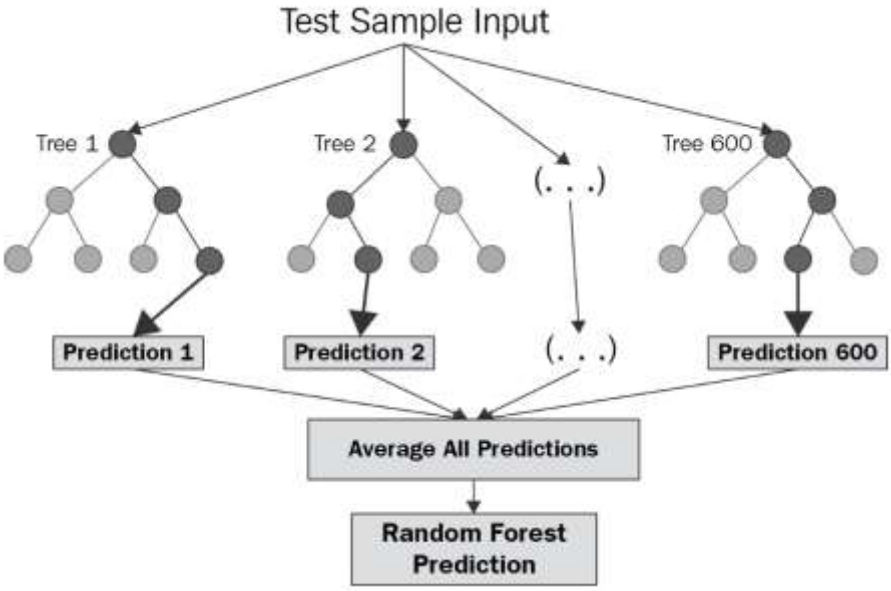
$E(S) = \sum_{i=1}^{c} -p_i log_2 p_i$ - This is a formula of entropy.

Information gain[3] - is a reduction in entropy. It is the difference between the starting node's uncertainty and the weighted impurity of the two child nodes.

Information Gain = Entropy(parent) - [Average entropy(children)]

Gini impurity[4] - is a measurement of the likelihood of an incorrect classification of a new instance of a random variable, if that new instance were randomly classified according to the distribution of class labels from the data set.

Random Forest[5] is another method that is considered a supervised learning method. It can also be used for both regression and classification problems. A random forest consists of several decision trees and based on the predictions from trees random forest gets the results.



1 - pic. Illustration of Random Forest[6]

Pros and cons of random forest algorithm:

Pros:

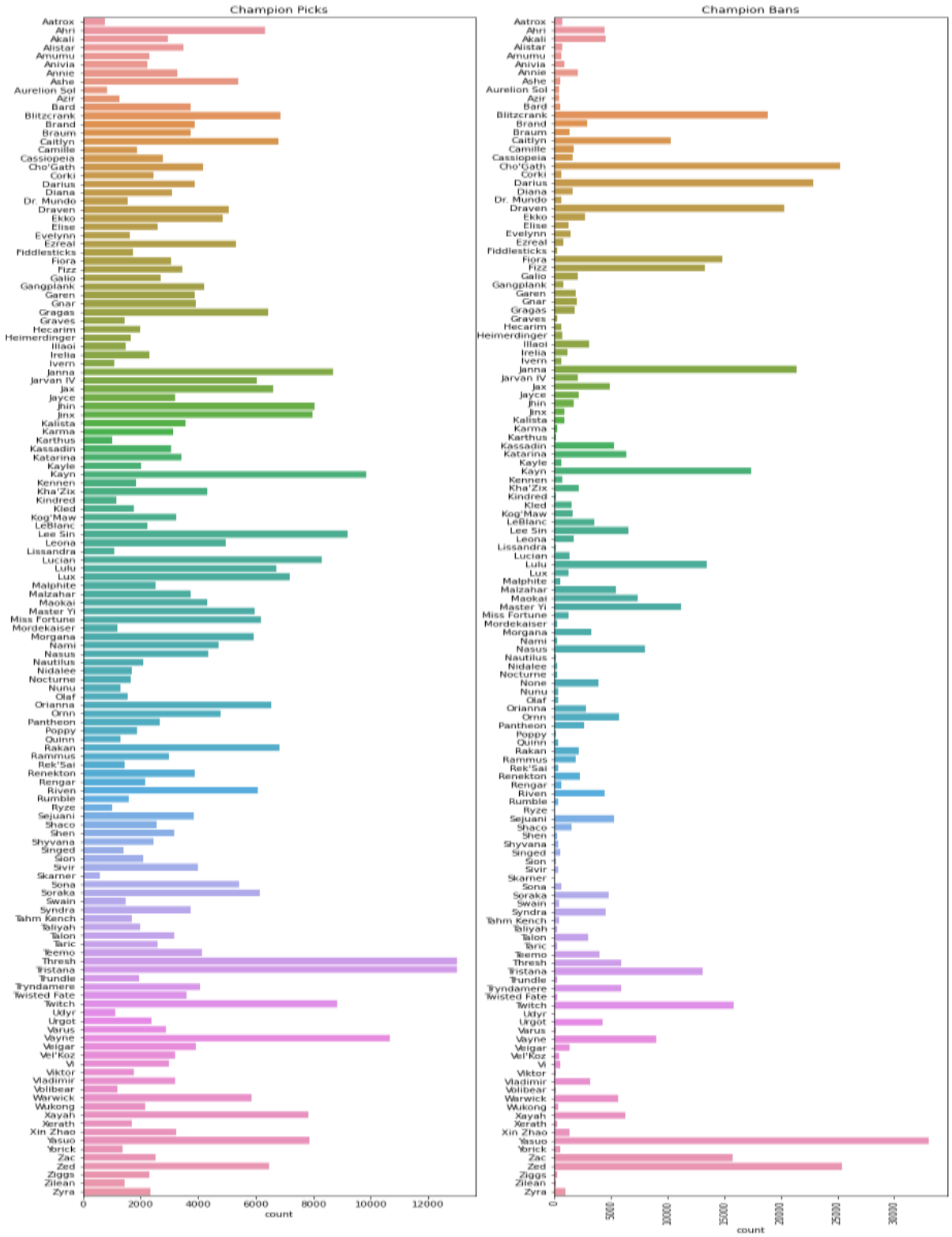
- Robust to outliers.
- Works well with non-linear data.
- Lower risk of overfitting.
- Runs efficiently on a large dataset.
- Better accuracy than other classification algorithms.

Cons:

- Random forests are found to be biased while dealing with categorical variables.
- Slow Training.
- Not suitable for linear methods with a lot of sparse features

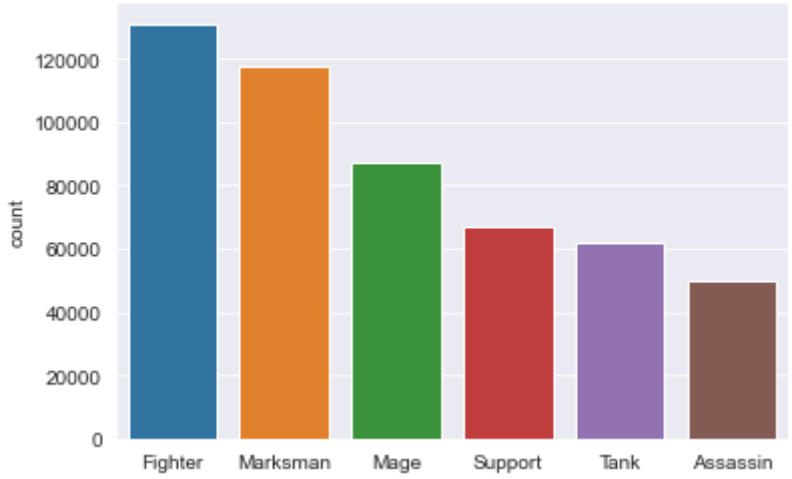
Methodology In this article, we are going to use the aforementioned algorithms to predict the winner of the video game called League of Legends[7]. This is a strategic game where 2 teams fight with each other and each team has 5 heroes and their towers. To win the game one of the teams should destroy all the towers of another team. LoL very popular game among people nowadays. We get the dataset from the kaggle[8] website where a huge number of different datasets are available. The dataset has **61** columns and **50000** rows. After preprocessing the number of columns decreased to 39. During the preprocessing, some unnecessary features were deleted and new ones created.

During analyzing the dataset some exciting correlations have been found. The first one is the choice of the heroes before the game.



2 - Pic. Total champion picks and bans over the entire dataset

From this illustration, we can see that Thresh and Tristana are quite popular heroes to choose while Yasuo, and Zed. Cho'Gath and Darius have mostly ignored heroes with the least number of choices.



3-Pic. The number of picks by type of heroes

This bar chart is about types of heroes. There are 6 groups of heroes:

- Fighter
- Marksman
- Mage
- Support
- Tank
- Assassin

The above list is given in descending order where Fighter has been chosen the most and the number of choices in assassin is the lowest.

After analysis, the dataset can be divided into some parts. Firstly, the last column (winner) would be dropped from the dataset, and remained dataset would be loaded as an X to train a model. The last column will be loaded as a y to fit our model.

After this, X and y will be divided into two parts: train and test. The ratio of division would be 80 % and 20 % respectively.

We will create 2 classifiers:

- Decision Tree Classifier
- Random Forest Classifier

These classifiers were created with a python library called sklearn.

Results

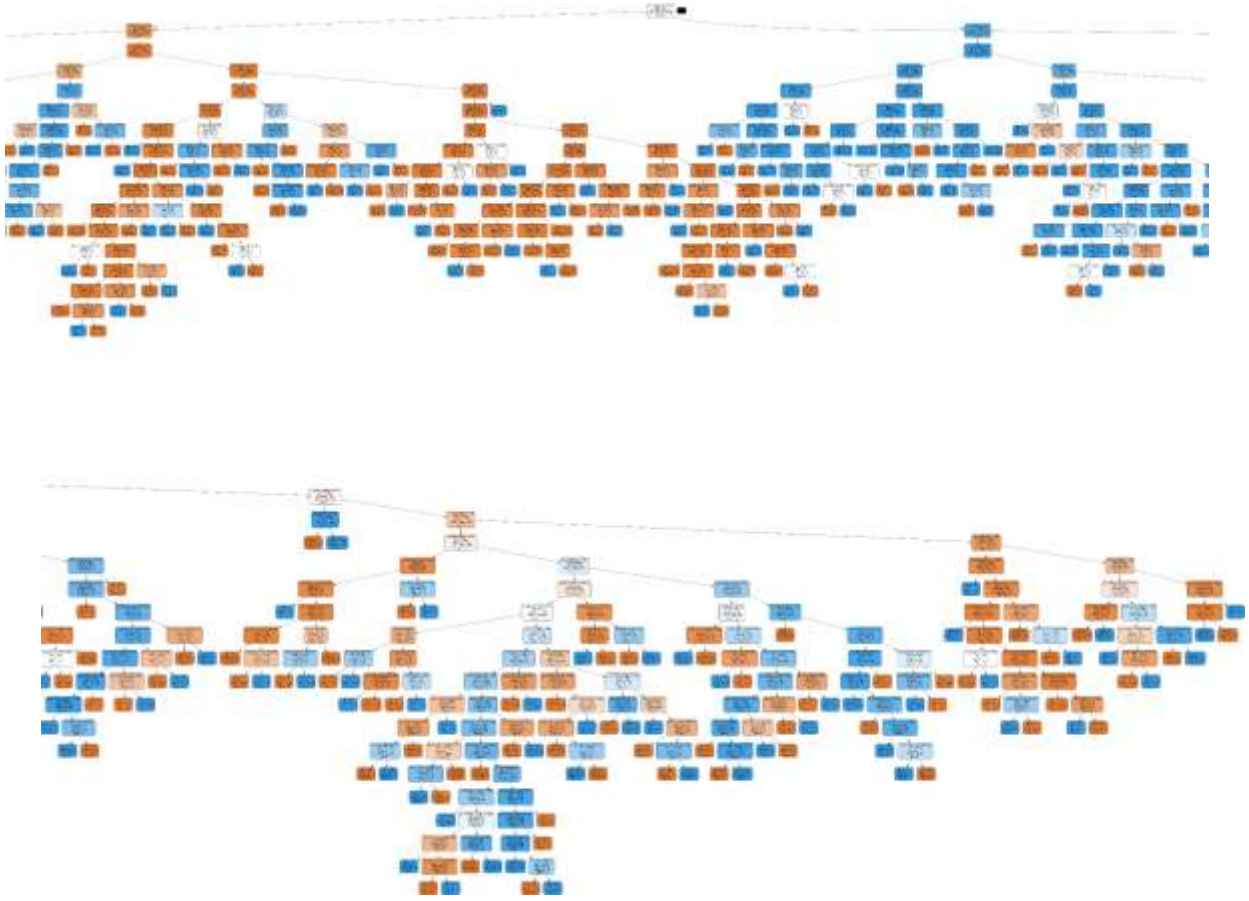
After the using the model in our dataset following results were gained:

Decision Tree:

Accuracy: 0.9592153816275005 or almost 96%.

If we use the sklearn library's feature importance attribute we can get which columns had a high impact on our model:

- 'first inhibitor'
- 't1_inhibitorKills'
- 't2_towerKills'
- 't1_towerKills'
- 't2_inhibitorKills'

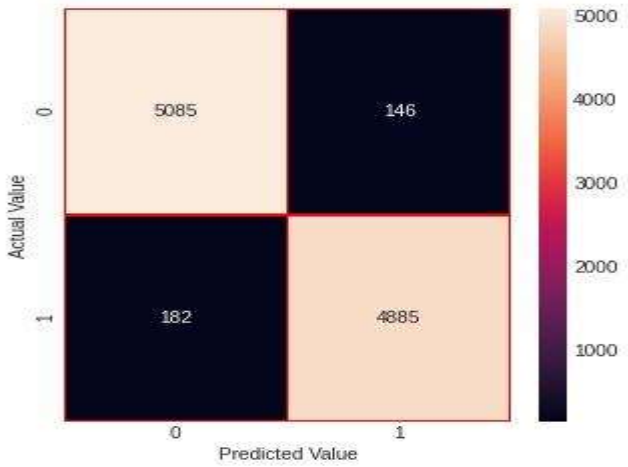


4 - Pic. Some parts of our decision tree.

Random Forest:

Accuracy: 0.9681491551757623 or almost 97 %.

Random Forest classifier got a slightly better result than Decision Tree(just 1 percent difference).



5-Pic. Confusion matrix of results from random forest algorithm.

In this confusion matrix[9], it can be seen that rows represent actual values, and columns show predicted values of the model. The first cell of the first row illustrated that the actual value was False and the model return False which is mostly called a **True Negative**. The second cell of the first row means that the actual value is False and the model predicted it as True(**False Negative**). The first cell of the second row shows that the model predicted False while the actual value was True(**False Positive**) and the last cell means that model correctly predicted True value which is the case called **True Positive.**

Although the random forest algorithm got better results than the decision tree (a percent higher accuracy), both algorithms performed quite well since both got a very high percent of accuracy.

Conclusion. This article describes a common analysis of supervised machine learning algorithms. Particularly, Decision tree and Random Forest algorithms were compared and done in the research. The dataset which was used in this paper was taken from kaggle[8] and it was about a popular strategic game called 'League of Legends'. This dataset had more than 50 000 rows and 61 columns about the game. The main purpose was to find a winner based on the information from the dataset. The aforementioned algorithms succeed to accomplish the task with quite a high accuracy. Both of the models which were built on decision trees and random forest algorithms were trained with the knowledge from the dataset. In the end, these models could predict who would win the game if they were provided the necessary features to do a prediction.

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UDC: 94(584.4)

ABULQASIM FIRDAWSI'S PEDAGOGICAL VIEWS ON THE INTELLIGENCE, SPIRITUAL AND MORAL EDUCATION OF THE YOUTH

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Annotatsiya: Ushbu maqolada, Abulqosim Firdavsiy ezgulik va ijobiy fazilatlarni jamiyat ma'naviyati rivojining eng yaxshi poydevori deb bilishi, Abulqosim Firdavsiy xalqqa zulm va zo‘ravonlikni salbiy xislatlar qatoriga kiritib, “Shohnoma”da zolim, xalqqa yomonlik qilganlarni badkirdorlar deb atashi, Firdavsiyning “Shohnoma”sida shaxs va shaxsni o‘rganish ham dolzarb bo‘lib, bu yerda asosiy tezislardan biri shaxs va shaxsning hayot faoliyati jarayonida shakllanib, rivojlanib borishi hamda Firdavsiy pedagogikasining axloqiy qarashlari jihatlari ijobiy va dunyoviy dunyoqarashni qayta qurishga hissa qo‘shishi, bu esa o‘rta asrlar musulmon madaniyatida rasional va irrasionallik muvozanatini saqlashga va shu orqali hozirgi kungacha talabda qolishga xizmat qilishi, yaxshilik va yomonlik, adolat, insonparvarlik va boshqalarning ijtimoiy-axloqiy masalalarini o‘rganish, axloqiy qadriyatlarning inson hayotidagi rolini belgilash, butun ijtimoiy hayotni tashkil etishda axloqiy omilning ahamiyatiga e'tibor berish kabi masalalar tahlil etiladi.

Kalit so’zlar: Ijtimoiy-axloqiy muammolar, inson tarbiyasi, ezgulik, aql-idrok, insonparvarlik, adolatga da'vat etish, barkamollik tamoyillari, yolg‘on, jinoyat, zo‘ravonlik, g‘azab, do‘q-po‘pisa, ta'magirlik va pulxo‘rlik, hasad va adovat, xalqqa zulm va zo‘ravonlik, tinchlik, axloq, do‘stlik, aql-idrok, vatanparvarlik, hamjihatlik, birlik, haqiqat va adolat masalalar.

Аннотация: В данной статье приводится информация о том, что Абулкасим Фирдавсий считает добродетель и положительные качества лучшим фундаментом для развития духовности общества, Абулкасим Фирдавсий относит угнетение и насилие над людьми к отрицательным качествам, и описывает тех, кто причиняет зло людям в Шахнаме, Фирдавсий также актуально изучил личности, где одним из основных тезисов является формирование и развитие личности в процессе жизнедеятельности. Аспекты нравственных воззрений педагогики Фирдавсий способствуют реконструкции позитивного и светского мировоззрения, служащего поддержанию баланса рациональности и иррациональности в средневековой мусульманской культуре и, таким образом, остаются востребованными и по сей день, изучению социально-этических вопросов добра. и зла, справедливости, гуманизма и др. определяя роль нравственных ценностей в жизни человека, обращая внимание на значение нравственного фактора в организации всей общественной жизни.

Ключевые слова: Социально-нравственные проблемы, человеческое воспитание, добро, ум, человечность, призыв к справедливости, принципы честности, ложь, преступление, насилие, гнев, угрозы, жадность, зависть и вражда, угнетение и насилие над людьми, вопросы мир, нравственность, дружба, интеллект, патриотизм, солидарность, единство, правда и справедливость.

Abstract: This article provides information on the facts that Abulqasim Firdawsi considers virtue and positive qualities to be the best foundation for the development of the society's spirituality, Abulqasim Firdawsi includes oppression and violence against the people as negative qualities, and describes those who do evil to the people tyrants and evildoers in the Shahnama, in Firdausi's "Shahnama" the study of the individual and the personality is also relevant, where one of the main theses is the formation and development of the individual and the personality in the course of life activities. Aspects of moral views of Firdawsi pedagogy contribute to the reconstruction of a positive and secular worldview, which serves to maintain the balance of rationality and irrationality in medieval Muslim culture and thus remain in demand to this day, to study the socio-ethical issues of good and evil, justice, humanitarianism, etc. determining the role of moral values in human life, paying attention to the importance of the moral factor in the organization of the entire social life.

Key words: Socio-moral problems, human education, goodness, intelligence, humanity, calling for justice, principles of integrity, lies, crime, violence, anger, threats, greed, envy and enmity, oppression and violence against the people , issues of peace, morality, friendship, intelligence, patriotism, solidarity, unity, truth and justice.

Introduction. Parental responsibility plays an important role in the education and development of the child. First of all, education should have an educational aspect. A child learns the first behavioral skills from parents. Thanks to them, he learns the experience of behavior, culture and ethics.

In pedagogic studies, the opinions of Firdawsi, Jami, S. Ayniy and others regarding the issues of patriotic education have not been paid enough attention. All this had a negative impact on education, in particular, civic-patriotic education. Halimov, in his doctoral dissertation devoted to the problem of the theoretical foundations of moral-patriotic education of elementary school students based on the development of critical thinking, while studying one of the topics of "Shahnama" states: "Abulqasim Firdawsi's Shahnama (Book of Kings) shows that kings and heroes consider it their sacred duty to protect the Motherland from numerous enemies. The issues of peace, morality, friendship, intelligence, patriotism, solidarity, unity, truth and justice are embedded in Firdawsi's entire ghazal.

Literature Review: The treasure of morality and patriotism is a poem translated into verse by Firdawsi. The main idea of the work - the struggle between "good and evil" runs through the entire poem like a red thread, and is reflected in various situations, behavior and actions of the characters. The pedagogical ideas of Abulqasim Firdawsi and Ibn Sina are considered in the works of the Tajik researcher A. Halimov [1]. Despite the fact that R. Khokiroev studied "Shahnama" philologically, he emphasizes the following about the ideas of patriotism and physical education in "Shahnama": a bright example of a mentally and physically beautiful person, because they are distinguished by physical strength [2]. "Shahnoma" contains the ideal of a

perfect person, and the poet contrasts the perfect person with the second category of people - supporters of darkness and evil, who are characterized by low qualities such as enmity, treachery, greed, pride, etc.

Researcher G. Najmiddinova writes about Abu Ali ibn Sina: “Abu Ali ibn Sina, a mature scholar of the Eastern Renaissance, wrote a special book “Tadbir al-Anozil” devoted to the problems of education. It reflects the duties of parents in raising children. The work reflects thoughts about tasks, the duty of parents in raising children, and their mutual relations. It is especially shown how parents, with their hard work, inculcate love for profession and crafts in children. Organization of children’s life, their ability to use the child’s time correctly and efficiently is the guarantee of the correctness of family upbringing, organization of children’s future life. This shows that raising a child in a family is a very complex and delicate process, so it should start from birth and continue forever” [3].

Research Methodology. The feasibility of analyzing the social aspect of medieval philosophical thought is also determined by the presence of specific motives in modern philosophical literature that claim to highlight their “own” historical and spiritual heritage. This interest is due to the endless interest in the heritage of Abulqasim Firdawsi, the fact that his wisdom continues to be paid attention to in all regions of the world, and “Shahnama” remains one of the monuments of Persian-Tajik culture. First of all, Firdawsi’s pedagogical and moral-aesthetic ideas are of interest to many people, because his appeal to reason has no parallel either in his time or in subsequent centuries. At the same time, Firdawsi’s ideas are still not sufficiently studied, except for individual works in Eastern literature, there is still no special study in which this topic is systematically analyzed. In addition, major orientalists and famous scholars of the West and East tend to believe that the influence of the most popular religious, philosophical and cultural trends, as well as the presence of historical traditions, can be seen in the “Shahnama” of Abul Qasim Firdawsi. Against this background, the comparative analysis of socio-historical factors affecting the creation of the great work can contribute to drawing more reasonable conclusions about the worldview ideas of Abulqasim Firdawsi.

Analysis And Results. The Shahnama is the part of his worldview that requires a theoretical understanding as a whole. In this regard, the comparative study of Abulqasim Firdawsi’s pedagogical views is related to the need to define and draw an objective landscape and direction in his spiritual and moral views in general and socio-political views [4].

The relevance of studying the pedagogical, social, moral-aesthetic views of Abulqasim Firdawsi also depends on the following circumstances and reasons:

- the continuing social tension in the Muslim world, the inter-ethnic and inter-confessional problems of our time, religious extremist feelings often create an acute problem of establishing peace and consensus among different social groups by developing a strategy for stabilizing society, agreement and peace. Comparative study of Abulqasim Firdawsi’s pedagogical, social, moral-aesthetic views along with other modern socio-humanities provides important material for the development of this strategy;

- studying the problem of a perfect person, a mature society (in the example of the concept of "victory of reason"), considered by Firdawsi in his "Shahnama", is relevant from the point of view of its more consistent development. Society is possible on the condition that it appeals to reason. Real development of society, education of a mature, adequate person in it is also a condition for reasonable response to the demands of the times;

- the state acting on the basis of reason and logic, as well as the study of the issue of a rational society characterized by diversity on the one hand, and unity and interdependence of its constituent elements on the other. important for modern society, including Tajikistan. "Shahnama" and Abulqasim Firdawsi's teachings about the state have a rational grain, and their detailed study can be of great help in developing new approaches to this problem;

- In Firdawsi's "Shahnama", the study of personality is also relevant, one of the main theses here is the idea that personality is formed and developed in the course of life activities.

- Aspects of the ethical views of Firdawsi's thought pedagogy contribute to the reconstruction of a positive and secular worldview, which served to maintain the balance of rationality and irrationality in medieval Muslim culture and thus remain in demand to this day.

- to study social and moral issues of good and bad, justice, humanity, etc., to determine the role of moral values in human life, to pay attention to the importance of the moral factor in the organization of the whole social life . The structure remains relevant, especially for modern society. The analysis of socio-ethical problems in Abulqosim Firdawsi's "Shahnama" allows defining and forming the axiological foundations of human education based on the principles of virtue, intelligence and knowledge, humanitarianism, call to justice, perfection and all-round perfection.

Great Firdawsi's "Shahnama" is a unique encyclopedic work, in which the thinker's pedagogical, philosophical, moral, religious-aesthetic views are poetically illuminated. Despite the passage of thousands of years, the image of a well-developed, beautiful, perfect human being reflected in "Shahnama" - the ideal of Firdawsi does not lose its importance even today. Since the 19th century, European orientalists have thoroughly studied the life and work of the poet, analyzed his literary heritage, philosophical, socio-ethical and aesthetic views, and determined his place and role in the development of the Persian language. A lot of work has been done to translate "Shahnama" into many languages of the world. European oriental studies devoted many works to Firdawsi and his ghazals.

In Soviet oriental studies, V.V. Barthold, E. E. Bertels, I.S. Braginsky paid great attention to the place of Firdawsi and his poems in literature and history, and indirectly or directly influenced some aspects of the moral system of the thinker poet [5].

Abulqasim Firdawsi considers goodness and positive qualities to be the best foundation for the development of society's spirituality. and "Everything is unnecessary and indecent to the mind and thinking of a person who is not compatible." Denying human qualities such as lies, crime, violence, anger, threats, greed, jealousy and enmity, he calls them unnecessary and wrong in "Shahnama" and urges people to refrain from them. Abulqasim Firdawsi includes oppression and violence against the

people as negative qualities, and in “Shahnama” he calls those who do harm to the people as tyrants. He strongly criticizes them and concludes that it would be better to rid the world of such people [8].

Firdawsi also lists selfishness, cunning, betrayal, deception, and unfaithfulness to one’s word as negative qualities. Those who commit such barbarities he classifies as unfriendly to reason. The wise old man said that people who follow selfishness are far from intelligence and faith in God and are addicted to their own selfishness.

Another negative quality strongly criticized by Abulqasim Firdawsi is the weakness of the soul in fulfilling its obligations. Because he is treacherous, unfaithful to his words, has a weak character and does not believe in his own soul. Laziness and as Abulqasim Firdawsi said, the badness of a person causes the society to turn its back on him.

Conclusion. In conclusion, we can say that Abulqasim Firdawsi's pedagogical views are an endless sea, in which every seeker of truth will have the priceless masterpieces of his spiritual thoughts, and will decorate morality with his rationalism and wisdom.

The Islamic sect also does not recommend entering into enmity and sedition, calling these qualities the reasons for the breakdown of families and even the collapse of societies and states. In the legendary-historical poems of Abulqasim Firdawsi, war, enmity, conspiracies are condemned in his poetics, and it is often seen that their role in the destruction of civilizations and the destruction of all human achievements is described. Therefore, the wise old man proves that enmity and intrigue are unworthy of knights and brave men, brings their negative meaning and condemns them in various life situations, even in the drama of the murder of Siovush and the accusation of Afrosiyab. Not antagonizing the people and putting an end to the confrontation, but pointing to the origin of the enmity between the Iranians and the Turanians, pointing to them as the cause of long-term instability in long-term enmity and intrigues. The bloodshed and the deaths of thousands of young soldiers made many sides hostile.

Following the wise and mystical teachings of the great Abulqasim Firdawsi, one can come to the conclusion that conspiracy and enmity not only lead to bad consequences, but also lead to the general destabilization of society and the slaughter of innocent people.

From the point of view of Abulqasim Firdawsi and from the point of view of his rationalism, man is actually one with his species, all people are brothers, especially a brother cannot shed the blood of his brother, because the Creator himself is the judge and prevents bloodshed and does not agree. Whoever sheds someone’s blood unjustly, is actually an enemy of the only Creator, and the result of his action can only be overthrown from the status given to him by God.

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PROFESSIONAL DEVELOPMENT OF RAILWAY WORKERS (SOCIOLOGICAL APPROACH)

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Annotasiya. Ushbu maqolada temir yo'l sohasida bo'lajak ishchilarning kasbiy rivojlanishiga ta'sir qiluvchi omillar haqida so'z boradi. Maqolada ijtimoiy institutlar bilan bir qatorda sotsiologik yondashuv haqida so‘z yuritilib, kasbga yo‘naltirish, kasb tanlash, kasbiy muhit, oliy ta’limning malaka oshirishga ta’siri masalalariga alohida ahamiyat beriladi.

Kalit so'zlar: malaka oshirish, kasbiy yo'nalish, oliy ta'lim, ijtimoiy, kasbiy faoliyat.

Аннотация. В данной статье говорится о факторах, влияющих на профессиональное развитие будущих работников железнодорожной отрасли. В статье рассматривается социологический подход, а также социальные институты, и особое значение придается вопросам профориентации, выбора профессии, профессиональной среды, влияния высшего образования на профессиональное развитие.

Ключевые слова: повышение квалификации, профессиональная направленность, высшее образование, социальная, профессиональная деятельность.

Abstract. This article talks about the factors influencing the professional development of future workers in the railway industry. The article discusses the sociological approach, as well as social institutions, and attaches particular importance to the issues of career guidance, choice of profession, professional environment, the impact of higher education on professional development.

Keywords: advanced training, professional orientation, higher education, social, professional activity.

Introduction. The task of higher education in our republic is not only to give knowledge to future specialists of the railway industry, but also to prepare them for

future professional and personal development, to express their independent opinion and self-awareness, to activate their creative potential. . So, the modern tasks that are set for education today include not only the socialization of the individual, but also continuous development in the professional, emotional, spiritual and ethical spheres. Depending on the conditions and requirements arising in a changing society, future professionals must have the skills and qualifications to change their careers. This requires constant work, development and creativity from them [9]. Today, socio-economic, legal, psychological, pedagogical and methodological foundations for the education and upbringing of a comprehensively developed personality of high professional qualification have been created in our republic. However, there are a number of problems in the educational process that cannot be achieved without their solution. One of them is the formation of self-development competence among future specialists.

Main Part. Professional orientation, professional development has long been one of the most important problems of modern society. In personal conversations, when developing State educational standards and measures aimed at regulating vocational education, much attention is paid to the meaningful choice of a professional direction, but in practice this issue is still missing. These contradictions affect the general ideas about the social system, the study of individual social objects, systems and processes. The purpose of this article is to consider the factors that influence the professional development of railway workers from a pedagogical, psychological and sociological point of view.

For almost a century of scientific study of the issues of vocational guidance and professional development, there have been a number of important changes in the understanding of the tasks and priorities of this process. These changes are the product of different views, points of view and scientific innovations of scientists, socialization, political and educational processes, each of which can be interpreted as the result of a change in sociological paradigms. In this process, these views play an important role in the formation of new methods, revision and adaptation of the set of criteria for professional development and competence in accordance with the requirements of the current and future labor market.

The concept of development of the system of higher education in our country and the strategy of its reform are undoubtedly inextricably linked with the idea of a humanistic paradigm aimed at pedagogical influence on the self-development of the individual, including professional development.

Scientists interpret the psychological and pedagogical aspects of the concept of "development" in different ways. For example, the Dictionary of a Practical Psychologist gives the following interpretation of this concept:

1) strengthening, strengthening;

2) achievement of a certain level of spiritual, mental maturity, consciousness, culture and other similar qualities;

3) achievement of a certain level of strength, power, maturity; increase the level of something;

4) distribute and disseminate something on a large scale, using the available opportunity, power;

5) spreading something new, deepening its content or putting it into practice;

6) the process and result of the transition from simple to complex, from low to high, to a new, qualitatively improved state [3].

From this it is clear that development is a peculiar process, as a result of which novelty arises, something qualitatively new arises. Three types of development can be distinguished among future railway workers: physical, mental (spiritual) and social. In this case, the student takes the lead.

Personality is considered as the inner essence of a person, which determines his interaction with the outside world. Such an understanding of the personality and the uniqueness of its development makes it possible to define "personal development" as a fundamental ability of a person. As a result of development, a person becomes a real subject of his life and turns his life activity into a subject of practical changes. Vital activity aimed at achieving a consciously set goal is considered as a form of active attitude of the subject to being, and it is within the framework of this vital activity and active attitude that a person develops him/herself.

Much of the work done in the field of education and personal development over the past decade has been related to the concepts of competence and competence. These concepts came into circulation in the 70s of the 20th century, and today they have taken a leading place in the field of education. Regarding the terms “competence” and “competence”, the American linguist N. Chomsky in his work “Aspects of the Theory of Syntax” says: “we make a fundamental difference between competence (who knows, speaks, hears his native language) and consumption (who actually uses the language in specific cases)” [7] or “a person’s ability to perform an activity”. In this case, educational, professional, etc. means activity. Many scientists and specialists expressed their opinion about the concepts of competence and competence. For example, in the work of J. Raven “Competence in modern society”, published in 1984: “it consists of a large number of components, many of which are independent of each other ... some components are more related to the cognitive sphere, others to the emotional sphere is relevant... These components can complement each other in effective self-management". At the International European Council on Education in the 21st Century, Jacques Delors, in his article "Education: A Hidden Treasure," describes "the four pillars on which education rests": learning to know; learn how to perform learn to live together; learn to live [4].

This reveals the main content of global competence. According to Jacques Delors, learning to speak means not only having professional qualifications, but also being competent in a broad sense, that is, being able to work in groups and being able to successfully get out of many difficult situations that arise in the process of work. [5]. It should be noted that along with the concept of "competence" there are also cases when the term "skill base" is used as its synonym.

Since the 1990s, research has been conducted on the application of competence as a scientific category to education. In particular, W. Hutmacher stated that the concept of "competence" is closer to the concept of "I know how ..." than "I know that ..." in the field of concepts. Later (in 1998) S. Sho introduced the concepts of competence into the content of "basic skills", such as self-development, self-management, relationships with other people, information processing, analysis,

planning, control [6]. Since 2000, the competency-based approach has been included in the content of vocational education standards and general education subjects. The competence-based approach to educational practice in Uzbekistan was introduced by the Resolution of the Cabinet of Ministers No. 187 of April 6, 2017 [10].

According to Y.R. Nazhmiddinov, the essence of the concept of "competence" is expressed in its collective nature, that is, in the integration of knowledge, skills, values, directions and attitudes, each of which is equally important for the implementation of professional activities. The main aspect of competence is the ability to perform daily activities or completely new activities based on the unity of knowledge, skills, values, attitudes and attitudes. Competence can also be understood as the ability to apply knowledge, skills, attitudes and experience in familiar and unfamiliar professional situations [11].

In our opinion, competence is interrelated knowledge, skills, abilities, methods related to activities carried out within certain subjects and processes. They are used in the process of effectively solving problems of different levels. In this process, the competence of professional development is of particular importance for future railway workers. In the sociological approach, issues of professions and professional development began to be studied with special attention to the middle of the twentieth century. In particular, scientific studies of professional activity and its components were carried out.

M. Weber and his followers show a set of unique criteria that determine the specifics of a profession as a social phenomenon, primarily choosing a profession in professional development, defining the essence of professional activity in the theory of a profession. Initially they are:

- high qualification;
- many years of professional training;
- property honor;
- impartial performance of tasks [12].

Later, this complex was enriched with such components as control and regulation, supreme power and public trust [13], professional autonomy [14]. In addition, later researchers came to the conclusion that each profession has its own set of characteristics that distinguish it from other activities. The initial ideas about the areas of work were formed according to the principles of changing professional and labor positions. In the 1900-1930s, thanks to the work of G. Munsterberg and F. Parsons, a theory of characteristics and factors was formed, based on the study of the candidate's compliance with certain requirements and norms of the workplace. The main provisions of the theory can be formulated as follows:

- each person is most suitable for one profession in terms of his personal qualities, primarily in terms of abilities that have professional significance;
- professional success and job satisfaction are determined by the level of compatibility of individual qualities and professional requirements;
- the very process of professional selection is conscious (conscious) and rational [15].

For a successful career, according to Parsons, you need to know your personal characteristics, strengths and weaknesses, their compatibility with the requirements

and opportunities of potential work [16]. G. Munsterberg emphasized that the best way to increase labor productivity is the choice for employees of positions that correspond to their individual psychological characteristics, especially their characteristic and intellectual characteristics. He and his supporters developed special tests to assess a person's professional abilities [16].

A person is influenced by a number of factors that can be divided into three groups:

- factors of social structure (belonging to a certain social group in a socialist society implies a trend that affects professional biography);
- factors associated with the historical stage of development of a particular social structure;
- specific situational factors - the abilities of individuals, the features of their personal biography [17].

There are many more factors of professional development, factors that destroy the future, for example, changes in the field of activity, professional structure and the education system, which lead to the fact that self-determination is not seen as a one-way process: in modern conditions, it is constantly changing its essence, as well as goals their implementation and timing, which is more correct to consider as a holistic social technology associated with redefinition, which poses the problem of expansion.

Also, the position of higher education in this regard affects professional growth. Officially, this is a professional educational institution that provides higher education. There is a duality in the student's position: the modern reality is such that any connection between the education received and the future place of work, occupation is not mandatory. This is confirmed by a comparative study of the professional plans of students of secondary vocational education and higher professional education, conducted by Volegov in 2012 [8]. The result of this study showed that the majority of students, even in the initial courses, do not associate their education with their future place of work.

Conclusion. Based on the above considerations, we recognize the existence of the following problems of the issue of "improving the qualifications of future railway workers":

- inadequate management of pre-school and post-school career guidance;
- the fact that the material and technical base of the university has not been brought to a level useful for a future specialist;
- the need of the individual for independent education and skills is not fully developed;
- passivity of motivation in humans;
- insufficient efficiency of the methods used in the educational process;
- from the point of view of the sociological approach, professional development does not occur intensively due to the fact that the processes of socialization of the individual are not related to the future place of work;
- lack of communicative level of the future railway worker.

These problems can be solved with the following solutions:

- proper socialization of the future specialist from a young age;
- career guidance;

- development of independent learning activities and communication - communicative competence;

- organization of "Open Days" at future workplaces, training and practice cycles not separated from production;

- setting a clear goal;

- activation of own capabilities and abilities.

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DEVELOPMENT TRENDS OF SMALL TOWNS

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Annotatsiya. Bozor munosabatlarining rivojlanishi, boshqaruvning yangi shakllarini takomillashtirish, shaharlarning o‘zgarishi, shahar madaniyati va o‘ziga xos muhitni yaratish jarayonlari bilan uzviy bog‘liq. Sotsiologiya, falsafa, geografiya, iqtisodiyot, tarix, ekologiya kabi fan vakillarining shaharlarni ijtimoiy iqtisodiy rivojlanishini o‘rganishga qiziqish kundan kunga ortib bormoqda. Ushbu fanlar doirasida jamiyatning ijtimoiy, iqtisodiy, demografik, moliyaviy, intellektual, madaniy salohiyati ochiqlanib boradi. Quyidagi maqola aynan kichik shaharlarning rivojlanish tendensiyalariga bag‘ishlangan.

Kalit so‘zlar: ivojlanish, shahar, infratuzilma, logistika, turizm, sanoat, madaniyat, an’ana, mehnat, ishlab chiqarish, daromad.

Аннотация. Развитие рыночных отношений неразрывно связано с процессами совершенствования новых форм управления, городской трансформации, городской культуры и создания уникальной среды. Ученые, такие как социологи, философы, географии, экономики, истории и экологии, все больше интересуются изучением социально-экономического развития городов. В рамках этих дисциплин раскрывается социальный, экономический, демографический, финансовый, интеллектуальный и культурный потенциал общества. Следующая статья посвящена тенденциям развития малых городов.

Ключевые слова: развитие, город, инфраструктура, логистика, туризм, промышленность, культура, традиции, труд, производство, доход.

Abstract. The development of market relations is inextricably linked with the processes of improving new forms of management, urban transformation, urban culture and the creation of a unique environment. Scientists such as sociologists, philosophers, geographers, economics, history and ecology are increasingly interested in studying the socio-economic development of cities. Within the framework of these disciplines, the social, economic, demographic, financial, intellectual and cultural potential of society is revealed. The next article is devoted to the development trends of small towns.

Keywords: development, city, infrastructure, logistics, tourism, industry, culture, traditions, labor, production, income.

Introduction. The transition to market relations will significantly change the socio-economic characteristics of the regions. These changes had a great impact on the social life of small towns. In modern conditions, it is important to strengthen the role of small towns in regional development. It is in this category of cities that the positive and negative consequences of socio-economic reforms are most acute, and the development of small towns determines the socio-economic development of the

country as a whole. Therefore, the problems of socio-economic development of small towns and the strategic management of this development are of particular importance.

Literature survey. The researches on small town development carried out by K.Kayumov [2, 3, 4], N.V.Zubarevich [5], S.Madhavan [6], L.Servillo [7], J. A.Berdegue, F. Carriazo, B.Jara, F. Modrego, I.Soloaga [8], H.W. Richardson [9], L.Sykora, O. Mulicek [10], S.A. Kozhevnikov [11] and others.

Research Methodology. In this article were used methods of abstraction and concretization, statistics, comparative analysis, work with documents and forecasting.

Analysis and results. The term "development" is often used in the following combinations: economic development, socio-economic development, economic development of a particular country, development of a region, city. Therefore, development is usually understood as any progressive change in the economic sphere. If the change is quantitative, then someone is talking about economic growth. With a qualitative change, we can talk about structural changes or changes in the content of development, or about the acquisition of new features by the economic system. In addition to purely economic indicators, social and environmental parameters of development are often considered. In addition, social and environmental characteristics have long been a full-fledged indicator of the level of development of any economic system, including the city. Development always has a direction determined by a goal or a system of goals. If this direction is positive, then someone speaks of progress; if it is negative, then they speak of regression or degradation. In other words, the nature of the development of small towns always implies a specific goal or a plurality of goals.

The goals of the socio-economic development of the region are to increase the income of the population, improve education, nutrition and health, reduce poverty, improve the state of the environment, ensure equal opportunities, ensure individual freedom, and enrich cultural life. Some of these goals are the same, but under certain conditions they can have significant differences. Therefore, limited funds can be directed to the development of health care or environmental protection. There is a conflict between development goals. However, the cleaner the environment, the healthier the population and the ultimate goal is human health. Therefore, in this case, the conflict between the goals is not resolved at all. However, in other cases, the conflict of development goals requires special consideration and specific methods of resolution. The development of a small town is a multidimensional process, which is usually considered in terms of a combination of various social and economic goals.

Even if we are talking only about economic development, it is usually considered in conjunction with social development. Socio-economic development includes the following aspects:

- growth of production and income;
- changes in the institutional, social and administrative structures of society;
- changes in public consciousness;
- changes in traditions and customs.

At present, the main goal of the economic development of most countries of the world and their regions is to improve the quality of life of the population. Therefore, the process of socio-economic development includes three main components:

- increase incomes, improve the health of the population and improve its education;

- creating conditions for the growth of human dignity as a result of the formation of social, political, economic and institutional systems aimed at respecting human dignity;

- Ensuring the level of people's freedom, including their economic freedom. The last two components of the quality of life are not always considered when assessing the level of socio-economic development of countries and regions, but recently they have become increasingly important in social, economic science and political practice.

The development of any city is a multi-purpose and multi-criteria process. The content of urban planning can vary greatly, and this difference depends not only on the initial level of development, but also on the characteristics of each city, its production structure, geographical location, industrial specialization, etc.

Traditionally, in the domestic economic literature, the following groups of placement factors are distinguished: natural, demographic, economic, geographical. Factors favoring the location of enterprises today mean additional opportunities for attracting investment, increasing employment and solving other pressing problems of the city tomorrow, which at the same time will become a condition for the successful socio-economic development of cities in the future. Therefore, it is necessary to consider the impact of these changes on the competitiveness of enterprises, as well as the group of cities under study. For small towns, for example, this means that some of them will develop as the most economically powerful regions, mobilizing their resources and attracting additional investment. Some remain, others develop only in certain areas (for example, in tourism).

Based on the explanation of the main trends in the economic development of cities, let us consider some basic theoretical provisions.

First, it is the theory of spatial superiority or the theory of placement. According to this theory, spatial advantages are manifested in any economic activity. They force certain types of production to be located in well-defined cities. For example, the aluminum industry will be located near cheap sources of electricity, metallurgical plants - near iron ore. Some local networks with high transport costs are close to markets. Each city has its own regional advantages associated with sources of raw materials or other factors of production (labor, land, energy) or proximity to markets. This theory basically explains the modern distribution of productive forces. In large cities or urban agglomerations, additional savings or additional economic efficiency are formed around successful industries, and additional savings are achieved through the sharing of common resources (labor, energy, infrastructure). The high concentration of industry in large cities makes it possible to obtain additional savings due to the influence of agglomeration (the total cost of all industries in a large agglomeration is less than the sum of the cost of each product if it is outside this agglomeration). Since some types of highly qualified activities in large centers can only be carried out in large centers (museums, large theaters, medical centers, etc.), additional opportunities for their development appear.

The concept that allows you to effectively analyze the problems of economic development of cities is a basic and auxiliary production concept. Key industries can

be identified in any region. That is, ancillary production, the products of which are mainly exported from the city and consumed mainly within the city. As an example, we can consider the main production of a machine-building plant and all the infrastructure serving it, such as postal services, kindergartens, schools, clinics, banks, insurance companies, transport services, construction. In general, as the main production expands, the entire infrastructure serving it expands. The long-term prosperity of small and medium-sized cities depends on how developed their infrastructure is and how ready it is to take on a new large production load. The more developed the infrastructure, the more flexible the entire economy of the city will be, a solid foundation for its social development and prosperity. This means that in the face of rapid changes in key industries, the level of development of the entire urban infrastructure will become a key factor in sustainable economic development.

When analyzing the quality of regional development, one can use the concept of D. Bell's theory of growth stages. Economic development in all countries and regions goes through three main stages: pre-industrial, industrial and post-industrial. The dominant sectors of pre-industrial development are mining, agriculture, fishing, forestry and mining. At the industrial stage, the manufacturing industry is dominated by mechanical engineering, light and food industries. At the post-industrial stage, the main industries based on socio-economic development are non-material industries: science, education, trade, finance, insurance, health care. The distinctive features of the post-industrial society are the relative decline in the production of goods and the relative growth in the production of services, the growth of high-tech production, the increase in the level of human resources, and the backlog of production. An overview of the world economic development allows a qualitative assessment of the origins and prospects of the economic development of a particular city. At different stages of development in cities, different processes take place, and different recipes for managing the process of economic development are applied to them.

At the stage of industrial development in the city, there are regularities determined by the role of the leading industries, "industrial locomotives", which are called the multiplier effect and determine the entire direction of the development of the city as a whole. The leading industry will create additional jobs, and the rest of the city's infrastructure will serve the main production. In such conditions, when one or several enterprises of one industry determine the state of the economy and social sphere of the entire city, cities with a single production structure are often formed.

At the post-industrial stage of city development, the level of urban infrastructure development becomes a key factor determining its well-being. Roads, communications, the housing sector, the service sector, leisure and entertainment facilities, the low cost of office services, low crime rates, the availability of qualified personnel - all this determines the potential for the development of a post-industrial city. The extent to which the entire urban infrastructure can accept new types of business, how quickly and efficiently the entire urban infrastructure can adapt to new conditions, determine the possibilities of post-industrial development.

Therefore, business should first of all carefully study and pay attention to what factors should be considered and what factors should be improved by the city

government to enhance socio-economic development and increase the competitiveness of its territories.

The main directions of sustainable development of small towns in European countries are:

- development of programs to promote the socio-economic development of small towns at the republican and regional levels;
- Purposeful and systematic development of urban planning projects for the development of small towns together with regional and all-Russian development projects;
- increasing the role of urban planning projects in the system of strategic planning for the development of small towns, intersectoral, integrated accounting of their future;
- active participation in the development of programs and socio-economic development of small towns and urban planning projects at all levels of local government, the implementation of these projects by heads of enterprises, small and medium-sized businesses and public organizations;
- Improving the skills of all participants in the development and implementation of projects for the development of small towns through thematic seminars and conferences within the framework of existing international programs;

Wide dissemination of positive experience in the development of small towns in European countries;

organization of annual international conferences on the sustainable development of small towns with the participation of regional and local authorities;

- organization of thematic competitions among small towns, restoration of cultural traditions, development of tourism, improvement of the environment;
- Conducting specialized training seminars on creative initiative, culture, small business, ecology, tourism development in small towns;
- Development of urban planning and regulatory documents, modern methods for developing urban planning projects and socio-economic programs, regular exchange of information with the creation of a special website using Internet resources, existing websites of interstate programs and projects;
- draw public attention to the problems of development of small towns at the present stage, accelerate the exchange of information, as well as combine the efforts of various forces and parties in this area;

There are also regional programs for the development of small towns in our country. Such programs are developed by local and provincial governments. These programs deal with the basic rules of urban planning. Therefore, for the sustainable development of these types of cities, further development of agriculture is necessary, since the structure of the economy of small towns specializes in the processing of agricultural products and the provision of services to this region.

According to experts, the following factors have a significant impact on the choice of consumers of tourism services, as well as on the participation of small towns in tourism or recreational purposes.

Transport infrastructure: factors such as distance from the consumer, availability of regional roads, road conditions, transport logistics (what routes can be used, what

sites can be visited along the way, the effectiveness of travel planning in terms of time and cost, etc.), the possibility of using alternative transport will be. According to experts, this factor primarily affects the choice of small settlements by tourists. In terms of transport accessibility, small cities can have a significant change in parameters (unlike large cities with communication centers), which affects the flow of tourists and the nature of the visit.

Accommodation infrastructure: collective housing, individual (apartments, private houses, etc.) campsites, etc. Most small towns cannot accommodate several groups of tourists at the same time. There are problems with the construction of residential buildings, problems with the capacity of buildings, for example, in the same Tula region, one-day trips are being replaced by two or three days.

Catering infrastructure: This includes the activities of local cuisine, catering establishments. An important element that attracts tourists today is the quality of service of local cuisines. Because tourists are interested in the taste of food and its health benefits. That is, the taste of local or national dishes is also a pleasant souvenir for tourists.

Exterior view of the city. A person who has temporarily left his territory wants not only physical, but also mental relaxation, to see beautiful, cozy cities. Improving the functioning of infrastructure in small towns will lead to a sharp increase in the number of domestic and foreign tourists. The influence of the appearance of the city on the tourist flow is also associated with the development of social networks or sites specializing in comments, where visitors can post photos taken during their trip. This means that the presence of attractions in small towns, communication, Internet speed and the availability of the necessary sites will increase the flow of tourists. This has a direct positive impact on the socio-economic indicators of a small town.

According to experts, it is important to be able to demonstrate this using the rich cultural and historical heritage of small towns. One of the following factors is the safety of tourists. Travelers need to feel safe in their seats and know where to turn in case of an emergency.

As factors influencing the sustainable development of small towns, experts also name transport infrastructure, water supply, sewerage, optimal conditions for recreation, and the involvement of the local population in activities related to tourism.

Local enthusiastic entrepreneurs or visitors play a key role in the development of tourism in small towns. In addition, tourism is generally not their main source of income. It should be noted that due to the small size of small settlements, the role of even one person in the development of the city can be significant. The main population is often passive and active only at the stage when there is a flow of tourists. Local residents are often not only unaware of the needs of tourists, but may also be unaware of the resources of their area. The staffing problem is also acute, for example, it is sometimes difficult to find a specialist for holding a city tournament.

Here we cite in our study. When asked if the city where you live has places to stay, 49% said yes, 43.4% said no, and 7.6% found it difficult to answer. Thus, the results of a study conducted in 12 small towns show that, to a certain extent, the activities of recreation and leisure facilities in small towns are not organized or accessible. This, in turn, will lead to a sharp reduction in the flow of tourists.

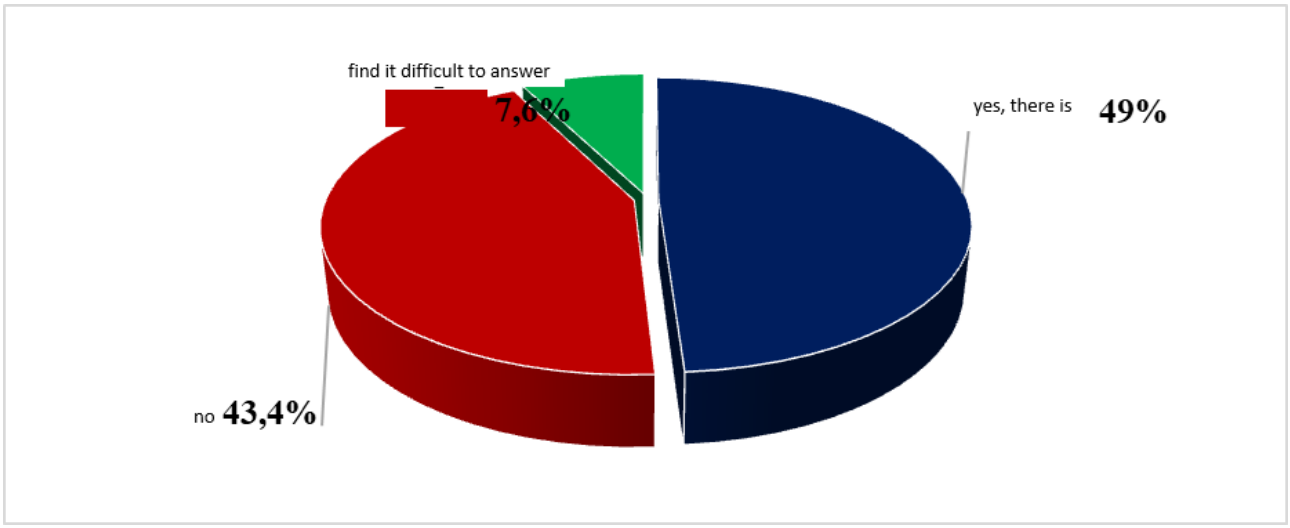

Figure 1. Are there places for recreation in the city where you live?

When we asked our respondents below if there are places for recreation and leisure, what places you visit most often, 34.3% of them answered that they would go to the park, while the rest expressed a different opinion.

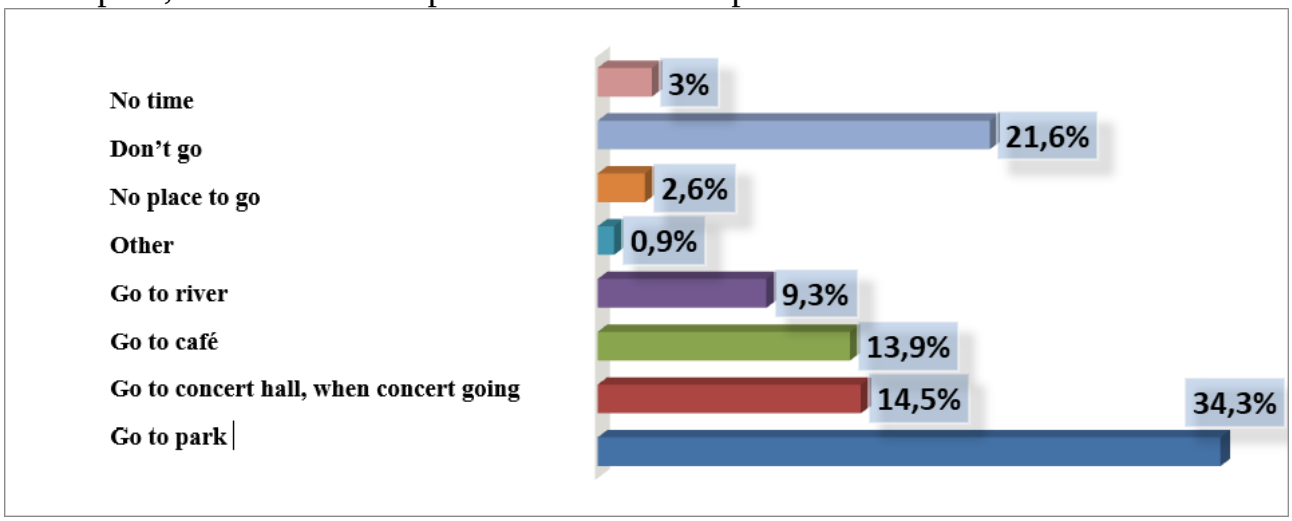

Figure 2. If there are places where you can relax and unwind, which places do you visit most often?

When asked if there are sports facilities in the city where you live, 70.9% answered yes, 23.4% - no, 5.8% - do not know. At the same time, we see that the sports infrastructure in small towns is relatively well developed. In this regard, the 67th goal of the New Development Strategy of Uzbekistan for 2022-2026 is "Accelerated development of small towns and villages through running in each of the Green Zones to be built, Health Corridors" for cycling and badminton, streetball and workout sites. Development of sports in small towns, strengthening the health of the population.

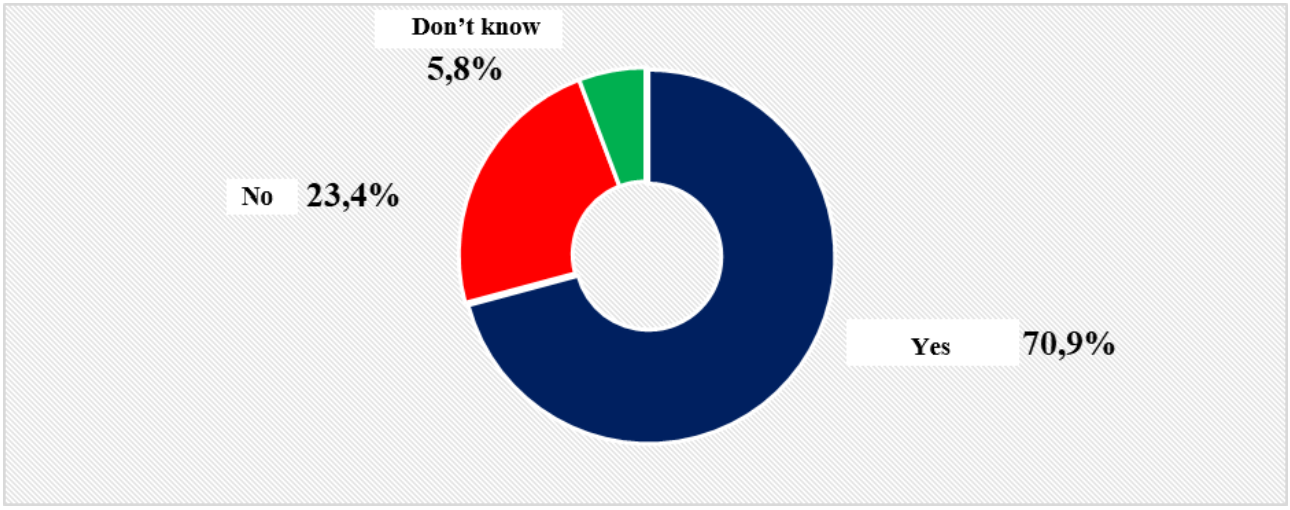

Figure 3. Does the city where you live have sports facilities?

Conclusion. In conclusion, we can say that practical steps for the development of small towns are based on improving the lives of citizens living in these cities, improving the infrastructure that exists for them, developing small and medium-sized businesses, expanding tourism and having a positive impact on the life of the country.

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INNOVATIVE MODELS OF IMPROVING THE ACTIVITIES OF INSTITUTIONS OF CIVIL SOCIETY.

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Annotasiya. Jamiyat boshqaruv konsepsiyalarining mazmuni, xususan jamiyatni ilmiy boshqarishda o‘z davriga xos bo‘lgan personal va korporativ boshqaruv yondashuvlar va uslublarini ilmiy ahamiyati ochib berilgan. Fuqarolik jamiyati institutlari faoliyatini takomillashtirishning ayni paytdagi turli xil taraqqiyot modellarida ijtimoiy-madaniy qarashlar kabi yondashuvlar innovasion model ekanligi o‘rganilgan. Innovasion modellar zamonaviy ijtimoiy-madaniy qarashlarni, shaxsni faoliyatini tushunishga va uning kamolotini va tafakkuri, ichki zahiralarini uyg‘otish orqali erishishi ilmiy asoslangan.

Kalit so‘zlar: fuqarolik jamiyati, jamiyat, davlat, boshqaruv, ilmiy boshqarish, innovasiya, innovasion model, innovasion boshqaruv, inson kapitali, ijtimoiy-madaniy texnologiyalar.

Аннотация. Содержание понятий государственного управления, в частности, научная значимость подходов и методов кадрового и корпоративного управления, присущих научному управлению обществом. Подходы к улучшению функционирования институтов гражданского общества, такие как социокультурные перспективы, изучались как инновационная модель в различных современных моделях развития. Инновационные модели научно базируются на достижении современных социокультурных воззрений, понимании деятельности личности и пробуждении ее зрелости и мышления, внутренних ресурсов.

Ключевые слова: гражданское общество, общество, государство, менеджмент, научный менеджмент, инновации, инновационная модель, инновационный менеджмент, человеческий капитал, социокультурные технологии.

Abstract. The content of the concepts of public administration, in particular, the scientific significance of the approaches and methods of personnel and corporate governance inherent in the scientific management of society. Approaches to improving the functioning of civil society institutions, such as socio-cultural perspectives, have been studied as an innovative model in various current development models. Innovative models are scientifically based on the achievement of modern socio-cultural

views, understanding the activities of the individual and the awakening of his maturity and thinking, inner resources.

Keywords: civil society, society, government, management, scientific management, innovation, innovative model, innovative management, human capital, socio-cultural technologies.

Introduction. As one of the modern approaches - the development of human capital, the development of society, as well as the creation of conditions for the effective work of the individual on his own initiative in the interests of the organization is considered a central issue. As a factor in the development of individual culture, this relationship stems from the needs of the subjects. At the same time, it is expedient to create conditions for their professional and personal (spiritual) maturity. In society, as a result of the comprehensive influence of the socio-cultural status of the individual on the set of needs identified in it, the formation of views and approaches to the scientific management of society and their implementation creates an effective employment.

No matter how much knowledge and experience humanity has accumulated about nature, society and being, on the one hand its adaptation to the environment and its way of life have become easier, on the other hand the deepened socio-cultural life has left it helpless in the face of new puzzles and questions. Accordingly, while the rational freedom of knowledge of the individual had a positive effect on the improvement of the quality of life, it caused complications in another respect.

Literature review. The Uzbek people prefer collective and human relations in the socio-cultural sphere. However, at a time when society is developing so rapidly, we see that at a new stage of development of Uzbekistan, innovative models for improving the activities of civil society institutions are directly related to reforms. As the President of the Republic of Uzbekistan said, “Now each of us, first of all, the task of the heads of public administration bodies is to ensure the responsible fulfillment of the tasks assigned to us on the basis of a critical assessment of the situation in the sector and sector for which we are responsible. That time has come ”[1,235.]. As an innovative approach to socio-cultural technologies in public administration, it is reflected in the strategic plans implemented under government programs.

The development of innovative models for improving the activities of civil society institutions will serve not only to increase the activities of individuals, but also for the development of society. In this case, the demand and attention to management is important. That is why Abu Nasr al-Farabi said, “There will be no absolute leader or governor elected from among them. They will be the most exalted, tested, the most deserving, the most deserving of men. Therefore, such leaders completely liberate their constituents, protecting them from external enemies ”[2.190.], Justifying the moral and cultural aspects of the focus on leaders who reflect the principles of governance of the state and society. Nizamulmulk's "Policy" is an important source for creating a theoretical basis for the priority of justice in public administration. He advocates the need to select leaders according to their moral qualities, to be fair and honest, to work with the council in the management of the state and society, to regularly monitor the activities. In particular, the following thoughts of the thinker A. Navoi, who expressed in his life experience that injustice and oppression lead to the decline of the state, ignorance of society, are important: “... Sometimes I sat in the emirate's seat and asked

for the people's complaints in the government court, and sometimes I served as a minister next to the king and showed mercy to the people who were looking at me with hope. ”[3.12.]. This suggests that the formation of the concept of justice in society is an important factor.

Mankind has been looking for ways to ensure the harmony of the interests of power and social needs in the era of social development. In this case, it is necessary to take into account the personal interests of society, as well as the general interests of the state, arising from the interests of citizens. No matter how strong the state is, the interests and needs of the people cannot be realized through the power of coordination across the country. "A national program" People's State "will be developed to implement the idea of" the state must serve the people ", which is relatively new to us in public administration, but in many developed democracies, the law" On public services "will be adopted" [4.84.] . This means the introduction of an innovative approach to public administration. In any case, it means that the interests of the people must come first.

Research Methodology. The development of civil society institutions in Uzbekistan, increasing their social and political activity [5.11.] Stems from the need to improve the system of governance. In today's world, democratic forms of social governance are striving for dominance. This is reflected in the priority of democracy in public life, the functioning of governing institutions based on democratic principles, as well as the strength of the protection of human dignity and rights. These features also apply to such a complex and multifaceted area in the cultural life of society as the development of civil society institutions.

Civil society institutions also play an important role in shaping, introducing and managing socio-cultural values and ensuring cultural development.

The tasks of socio-cultural management in society are the diversity of the activities of civil society institutions, the main purpose of which is to create the necessary conditions for the manifestation of the maturity and potential of the individual. From this point of view, the management of a society will be aimed at solving two interrelated and interdependent tasks, such as meeting the socio-cultural needs of its members and their continuous development.

Community management serves to organize and ensure the effectiveness of various creative processes aimed at creating and disseminating cultural values. Addressing the effectiveness of these tasks will lay the foundation for ensuring the active participation of citizens in the cultural life of society.

The strategic goal of the development of socio-cultural technologies, such as their effective management, depends on the socio-cultural issues of public authorities. Indeed, the continuity and gradual nature of such attention is also a necessary condition for achieving the intended goal in management.

Analysis And Results. Uzbekistan, as a state that aims to build a democratic state and civil society, is forming a system of public organizations. It also lives with great hopes, such as the formation of a national statehood, the establishment of a democratic state governed by the rule of law and the establishment of civil society. The social, political, economic and spiritual changes that have begun in developed countries, the emergence of various modernist views, the idea of industrial and postindustrial,

information societies affect the perception of civil society. Western society and its values are declining, the old notion of "civil society", today humanity is moving towards a completely new, broadly integrated and information-based society, in which "common religion", "interculture", "dialogue" will become the core values. theories are emerging. Recent global crises in the West, such as depression, demographic problems, religious and ethnic conflicts, and mass movements of certain segments of the population, especially youth and the unemployed, have influenced researchers' perceptions of society and encouraged them to discover a new social order.

Civil society is a necessary necessity in the theory of constitutional law to enhance a social life based on law and democracy. It is a socio-political system that guarantees the free choice of forms of economic, political and cultural life, the rule of law and human rights and freedoms, multi-party system, diversity of political institutions, ideologies and opinions, and the status of self-government. At the same time, every citizen of the country proves his political, social, economic and legal needs by actively participating in the activities of public associations, self-government bodies, political parties and non-governmental non-profit organizations.

Conclusions And Recommendations. It is necessary to develop new ways of developing the activities of civil society institutions, innovative models and conceptual-heuristic socio-cultural technologies. Therefore, the Decree of the President of the Republic of Uzbekistan No. PF-5430 of May 4, 2018 "On measures to radically increase the role of civil society institutions in the process of democratic renewal of the country" was adopted. It reads: systemic problems and shortcomings [6.]". The following important conclusions can be drawn as innovative models for improving the activities of civil society institutions:

1) there is a need for mature leadership to establish effective and constructive mechanisms of communication between the state and civil society;

2) increase the level of involvement of non-governmental non-profit organizations in the development and implementation of socio-economic development programs, regulations;

3) creation of effective mechanisms of cooperation between government agencies and non-governmental non-profit organizations, despite the creation of a legal framework, aimed at solving a wide range of social problems of citizens, especially the promotion of their initiatives and modern ideas;

4) increase measures of state support and encouragement of active, self-reliant non-governmental organizations offering innovative ideas for further socio-economic, socio-political development of the country;

5) It is necessary to improve the logistics of non-governmental non-profit organizations, to implement medium-term and long-term large-scale and national projects and programs allocated by the state to support civil society institutions.

This led to the establishment of the Advisory Council on Civil Society Development under the President of the Republic of Uzbekistan in order to increase the role and importance of civil society institutions at a new stage of our development, to strengthen cooperation with public authorities and administration.

As a result, the use of innovative models for the development of civil society institutions has become a topical issue today. The use of innovative models in social-

related technologies is determined by the fact that human life is aimed at improving the service to it.

The establishment of the national movement "Yuksalish" as an innovative model for improving the activities of civil society institutions, the organization of meetings of representatives of civil society institutions in the format of "Laboratory of Social Innovations", modern "Social Pharmacies" or any organization and we can show that the institution has its own "Virtual Reception".

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SOCIO-PHILOSOPHICAL ASPECT OF THE NEW INNOVATION AND INVESTMENT ENVIRONMENT

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Annotasiya: Ushbu maqolada innovasion pivojlanish zapup ijtimoiy muhit shakllanganida, yangilashni qo‘llab-quvvatlovchi yangi muhit mavjud bo‘lsa ijobiy natijalap bepashi haqidagi muammoli fikrlarni bildiradi. O‘zbekistonda bugun yangi innovasion va investision muhit shakllangan, aynan ushbu ijtimoiy muhit tufayli ijtimoiy-madaniy detepminantlap innovasion izlanishlapga yo‘nalish va tuptki bepmoqda. Muallif ichki va tashqi investisiyalap davlatning siyosiy hamda iqtisodiy pozisiyasini ifoda etib, jamiyatdagi yangilanishlapga sup'at olib kipmoqdaligini o‘ziga xos tarzda muhokama qiladi.

Kalit so‘zlar: Bozor iqtisodiyoti, tadbipkoplik, yangi iqtisodiy tafakkup, investisiya, investisiyaviy muhit, investisiyalap dinamikasi, innovasiya, innovasiya siyosati.

Аннотация. В данной статье представлен проблемный взгляд на то, что инновационное развитие чаще происходит при формировании социальной среды, где есть новая среда, поддерживающая инновации. Сегодня в Узбекистане сформировалась новая инновационная и инвестиционная среда, и именно благодаря этой социальной среде социальные и культурные детерминанты задают направление и поддержку инновационным исследованиям. Автор по-своему рассуждает о том, что внутренние и внешние инвестиции выражают политическую и экономическую позицию государства и придают импульс реформам в обществе.

Ключевые слова: Бизнес-экономика, предпринимательство, новое экономическое мышление, инвестиции, инвестиционная среда, инвестиционная динамика, инновации, инновационная политика.

Annotation. This article presents a problematic view that innovative development often occurs when a social environment is formed, where there is a new environment that supports innovation. Today, a new innovation and investment environment has emerged in Uzbekistan, and it is thanks to this social environment that social and cultural determinants set the direction and support for innovative research. The author, in his own way, argues that internal and external investments express the political and economic position of the state and give impetus to reforms in society.

Keywords: Business economics, entrepreneurship, new economic thinking, investments, investment environment, investment dynamics, innovations, innovation policy.

Introduction. The transition to independent economy, the development of entrepreneurship and the formation of a new economic mindset in the country, attracting investment has been carried out since the first year of Uzbekistan's transition to independent development. This is how our public's perception of the investment environment is formed. In fact, this theory and practice are derived from the theory and practical practice of the economic economy formed in advanced countries [1]. Undoubtedly, the first impression of the innovative and investment environment formed in the development of automatic development is also positive. They did not exist before in our economic and social thinking. "New Uzbekistan" associated with the name of our President Sh.M. Mirziyoev who requires a new approach to the innovative and investment environment. A new environment is emerging that is a sharp departure from the autocratic management environment, which we call the "new innovation and investment environment". So, what are the characteristics of the new environment? In our opinion, the distinctive features of the new innovation and investment environment are manifested in the following

1) in the state innovation and investment policy;
2) in public service;
3) in the bank finance and credit system;
4) in training activities;
5) in the propaganda of mass media.

The main direction can be continued, but, in our opinion, society is the basis, the foundation of the generalization of the whole. Therefore, the innovative and investment environment is a problem rooted in society.

"Innovation policy is understood as a purposeful activity that serves to ensure the effective application of the essence of innovation in order to increase the state's economy and solve the problem of socio-economic development" [2]. Analyzing the innovation policy in Uzbekistan, Professor Z.A. Muqumov says that its policy "does not correspond to modern trends". "This," he writes, "first of all, is explained by the fact that our society is moving from a scientific and technical stage to a stage where it is not yet fully formed. On the other hand, this is due to the weakness of the investment base and non-staged financial basis, high rates for taxation and budget and non-budget collection.

With this, it is important to note that the legal and non-motivational basis for innovation entrepreneurship has not yet been completed, and there is no legal status of the innovation entrepreneurship subject. On the other hand, the inability of the innovation center and the organization to quickly adapt to the changes in the external environment, the prolongation of the process of creative restructuring in the innovation center or its abandonment, the reduction of qualified scientific and other personnel in the company, the lack of strategic foreign culture and business training can also be mentioned separately. ” [3].

The main features of the innovation and investment policy:

- achieving high scientific and technical success based on new technology, production system, computerized and intellectualized industry that meets the highest demands of human activity;
- on the basis of the effectiveness of social development, the population of the village and the people of the village will be able to multiply the quality of life;
- to reach a new level in saving money, to reduce waste, to save energy, to save raw materials on the basis of a radical restructuring of the national economy system and foreign trade;
- pealization of new and higher social guarantees linked to economic development;
- relaxation and relaxation of the burden caused by the new stress, making the health care meaningful and lightening [4].

But it is mentioned that the main subject of this policy is the state. In this regard, we can cite as an example the cooperation between Uzbekistan and Germany. The GDP of Germany is 3 trillion euros, the fifth largest multiplier in the world. The country is engaged in high-tech industry. In Germany, the company that has been involved in innovative development is the leading company in Europe. He has invested 784.4 million US dollars in the economy of Uzbekistan so far. Today, in our republic, 123 companies of Hepmanian companies, 26 companies with full capital are operating, 33 companies and companies are officially accredited.

In the German company, the "Klass" concept with the "MAN" company and the new technological development of the "Lemken" and "Knauf" companies have been invested. It is the result of the foreign policy of the two countries that is focused on creating a positive innovation and investment environment. The Goethe Institute, the K. Adenauer and F. Ebert Foundation, the German Association of the People's University, the Coordinator of the German Language Department of the Central Department and more than ten other German organizations are operating in Uzbekistan. The fact that the German language is taught in 1,842 schools, 5,000 young people in Tashkent, Samarqand and Margilon are studying in three specialized schools that give the right to receive a diploma in the field of language, 4,443 teachers teach in the German language is evidence of the formation of an atmosphere of friendship, cooperation, mutual trust between the two peoples. Our president, Sh. M. Mirziyoev, highly appreciates the relationship between the two nations in terms of innovation and investment and says: "Our aspiration to bring our relationship to a new level in terms of quality, to give it a real sense of leadership is unwavering... Politics and security, trade, technology and innovation, We clearly describe the state and prospects of

cooperation in the fields of investment, education and culture. We strive to radically expand investment and technological cooperation with Germany" [5].

Research Methodology. In forming a new innovative and investment environment, it is important to use the economic and technical developments developed by the companies representing the world's most advanced countries, multinational cooperatives and industrial enterprises, and to develop a new way of working. For example, investors from Southern Korea has established 35 factories in many Andijan regions. As a result, it became possible to develop 37 completely new types of products, more than 30 thousand new jobs were opened. In this case, it is worth remembering such companies as "Oz Era Climate Control", "Uz Dong Ju Paint Co." Or the innovative and investment activities of such world-famous Chinese companies as "China CAMC Engineering Co., LTD", "HGC Shanghai Company", "CASALE SA", "Siemens", "Thyssen Krupp", "Volkswagen", "Knauf" create a business environment in our country.

Studying the dynamics of private investment increases the fact that the value of public investment is decreasing from year to year. The results of the 20 participating countries show that the USA (168 billion dollars), China (121 billion dollars) and Hong Kong (75 billion dollars) have invested heavily. In 2015, the USA invested USD 380 billion, Hong Kong USD 175 billion, China USD 136 billion, and Iceland USD 101 billion [7]. In the rest of the country, there is a trend of decreasing investment growth. Foreign direct investment in Uzbekistan is on the rise. It is obvious that this is a fascinating and profitable direction for the domestic investment of our country.

The state tax policy plays a big role in the formation of a new innovation and investment environment. The initial tax is especially used as a tool to discourage and scare private investors and investors. Thanks to the tax policy implemented in the new Uzbekistan, he became an entrepreneur. In the following year, the salary tax was reduced by 1.5 bap, the VAT rate was reduced from 20% to 15%, and a new Tax Code was adopted. In 2020, tax concessions for state enterprises and enterprises with more than 500,000 enterprises and 8 million optical enterprises were increased, totaling 66 trillion soums. Today, more than 554,700 self-employed individuals are granted tax benefits in our country [8].

Analyzes and Results. The organization of the state service in accordance with the demand for innovative development makes it possible to carry out business, entrepreneurship and other social services at a high level. The public service organized in countries such as the USA, Germany, and France, has accumulated a lot of experience that the innovations and effective implementation of reforms in social life depend on the justice and loyalty of the public service to the duties defined by the law, serving the public interest [9]. In accordance with the President's decree of December 12, 2017, "The National System of Public Services to the Population is in the process of being radically reformed", the Public Service Agency was established under the Judiciary.

From January 1, 2018, the activity of the "one-stop shop" directory was expanded and turned into the "State service directory" directory.

Today, the public service is completely newly organized, and strives to serve customers in an innovative way. The most important thing is the formation of the

business environment in our country, which serves to save people's time. For example, the State Tax Committee has set up a WEBSITE "Automated Tax Collection System" in order to install and use the online cash register system. This state service number increased from 24 in 2016 to 67 in 2020. At least 50 percent of the basic amount of social tax is paid. From July 1, 2020, the practice of returning the negative tax amount generated from the value added tax to the taxpayer has been suspended. For this, the businessman complains that he collected taxes while sitting in his office. With the tax payer's cover, the taxpayer's money and the withheld tax are returned. In 2020, 8.6 trillion soums were returned to taxpayers. It is known that in 2017, at the initiative of our President, a map was announced to conduct a test in the field of business. As a result of this program and the training conducted based on it, the number of training programs in our country has increased by two times, reaching 400 thousand. In December 2020, the President of the Republic of Azerbaijan proposed to extend this program for another two years in the Declaration to the Oliy Majlis of December 2020. This leads to reduction of the "green economy" in Uzbekistan. According to International experts, the "green economy" in the world is 17.2 percent, and in Uzbekistan it is 48 percent [10]. It is difficult to correct this negative point even with legislation, for this it is important to create a positive business environment in the country that is in line with the interests of people.

The introduction of advanced technology into the public service provides a favorable opportunity to create an innovative and investment environment. The expansion of the scope and scope of interactive services also defines the growth of customer loyalty. The valuable time of development is saved, the use of the service group is accelerated and simplified, and the bureaucratic barrier is improved. This feature is especially useful for creating and modulating a band. For example, in 2020, 45 e-services were introduced by the state tax service department for the purpose of introducing an opportunity to pay taxes by means of electronic communication technology. For this reason, the investment and development benefit from this state service has exceeded 700 million [11]. In order to further expand the scope of services in this area, a new institute was opened in accordance with the Decree "On the Establishment of a Fiscal Institute under the State Tax Committee of the Republic of Uzbekistan" adopted by our President. This institute trains specialists with the ability to carry out tax services in a modern way. It has established a partnership with Russia Financial Institute, which is beneficial for both parties to form an innovative service. The Cadastre Agency, established under the State Tax Committee, is also responsible for such facilitation.

Conclusion. The importance and importance of mass media in the formation of new innovative and investment environment is incomparable. It is thanks to the research and development of the university that the population will have objective information about the reforms, renewal and national characteristics of the country, economic, scientific-technical, technological and humanitarian relations of Uzbekistan with the world community. Today, 1,200 optical daily newspapers, more than 40 television programs, and various radio channels operate in our country. There is a lack of in-depth analysis in some of the universities that are being closed, and there is a shortage of qualified analysts for the field. However, the opening of the University of

Journalism and Mass Communication of Uzbekistan is a positive event in which a well-educated, quick-thinking, and truly creative journalist will be trained. According to our president Sh. M. Mirziyoev, this university is "a leading higher education institution in our republic, which has an innovative approach, has mastered the relevant technology, and has mastered the needs of modern society"[12].

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LOGICAL ASPECTS OF PROJEKTIV STYLE OF THINKING

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Annotasiya: Ushbu maqolada proektiv tafakkur tarzining kelib chiqishi, genezisi, evolyusion taraqqiyoti hamda uning mantiqiy jihatlari tahlil qilingan. Proektiv tafakkur tarzining ijtimoiy mohiyati, xususiyatlari, mantiqiy tafakur bilan dialiktik aloqadorligi va kognitiv rivojlanishi espitemologik jihatdan tadqiq qilingan. Proektiv tafakkur tarzining yoshlarda ilm-fan va ta'limda yangicha fikrlash turi sifatida innovasiyaning namoyon bo'lishi haqida refleksiv, falsafiy xulosalar berilgan. Shuningdek maqolada proektiv tafakkur tarzidagi an'anaviylik va yangilanishning parallel ifodalanishi, proektsion fikrlashning aspektlari haqida fikr-mulohazalar bildirilgan. Maqolada intellekt va tafakkurning bog'liqligi, hamda inson intellektining mukammal turi proektiv intellektning mazmun-mohiyati o'rganilib, uning komponentlari ochib berilgan. Ayniqsa yoshlarda proektiv tafakkur tarzini shaklantirishda ta'lim tizimida ijtimoiy-gumanitar fanlarni, xususan, mantiq, falsafa, futurologiya, virtualistikani chuqur o'qitishning evristik roli va ahamiyatiga urg'u berilgan.

Kalit so'zlar: proektiv tafakkur tarzi, mantiq, mantiqiy jihatlari, proektsion fikrlash, proektiv intellekt, loyiha, innovasion ta'lim, ta'lim, loyihalashtirish.

Аннотация: В данной статье анализируются происхождение, генезис, эволюционное развитие и его логические аспекты проективного стиля мышления. Эпитемологически изучены социальная сущность, особенности, диалектическая связь и когнитивное развитие проективного стиля мышления с логическим мышлением. Даны рефлексивные, философские выводы о проявлении проективного стиля мышления как нового типа мышления в науке и образовании у молодежи.Также в статье высказываются мнения о параллельном выражении традиции и обновления в стиле проективного мышления, аспектах проективного мышления. В статье исследуется связь интеллекта и мышления, а также раскрывается содержание и сущность идеального типа человеческого существа проективного интеллекта, его составляющие. Акцент был сделан на эвристической роли и важности углубленного преподавания социально-гуманитарных наук, в частности логики, философии, футурологии, виртуалистики в системе образования в формировании проективного стиля мышления, особенно у молодежи.

Ключевые слова: проективный стиль мышления, логика, логические аспекты, проекционное мышление, проективный интеллект, проект, инновационное образование, образование, проектирование.

Abstract: This article analyzes the origin, genesis, evolution development and its logical aspects of the projective style of thinking. The social essence, features, dialectical association and cognitive development of projective style of thinking with logical thinking have been studied epistemologically. Reflexive, philosophical

conclusions about the manifestation of protective style of thinking as a new type of thinking in science and education in young people are given. Also in article are expressed opinions about the parallel expression of tradition and renewal in the style of projective thinking, aspects of pro-thinking. The article explores the connection of intellect and thinking, as well as the content and essence of the perfect type of human being protective intellect, its components are revealed. Emphasis has been placed on the heuristic role and importance of in-depth teaching of socio-humanitarian sciences, in particular logic, philosophy, futurology, virtualistics in the education system in shaping the protective style of thinking, especially in young people.

Keywords: projectiv style of thinking, logic, logical aspects, proexion thinking, projects intelligence, project, innovation education, education, project, projection.

Introduction: In the way of life of humans, too, there is a process of innovation. At present, the directions and paradigms of socio-humanitarian Science in the Republic have entered the sphere of innovation restructuring. As an effect of this process, the concept of “innovation”, which in recent times has the ability to exert epistemological influence on the problem of proektiv style of thinking, has been introduced into the scope of the subject of science methodology. "It is important that our young people have independent thinking, high spiritual and spiritual potential, grow up to their peers on a global scale as people who are inseparable from any field, be happy [1.14], and develop a type of cognitive innovation in science, technology and education." Also, new principles and directions are being replaced in the development of social consciousness and thinking, wide opportunities for their improvement are being opened[2.9]. And this opportunity manifests itself constructively in the research of young researchers.

Literature review: In this study, more Russian, Uzbek and foreign philosophers, psychologists used scientific works.

Research Methodology: the study used the methods of critique-reflection, objectivity, systematic approach, diachronic and synchronous approach, innovative approach, analysis and synthesis, analogy, generalization, comparative analysis, historicity and logic unit of scientific knowledge.

Analysis and results: projektive when we look at the genesis of the mind scale, it is precisely the science of logical thinking and logic that is inextricably linked. Moscow methodical circle, which appeared in 1958 as a direct continuation of the Moscow logic circle, which was founded earlier, made a great contribution to proektiv thinking and understanding of such interrelated concepts as project, design, projective culture, etc.

O.I.Genisaresky, G.P.Shchedrovisky, V.L.Glazychev and others developed the philosophical and methodological foundations of proektiv thinking as an activity. They enveloped the structure and interconnectedness of professional thinking and various forms of knowledge: architecture, engineering, management, etc.

In scientific literature, Gvido Shtompf wrote in one article that " proektiv is not thought, but it is recognized as thinking. It was the concept of "stolen" by economists from design and became a fetish. In fact, this is a profession and a skill," there is an opinion expressed[3. 68-72].

To develop projektiv thinking it is necessary to know the accumulated intellektual riches of thinking theories such as associative psychology, behavior (bixorism), Gestalt psychology, psychoanalysis and others.

Proektiv thinkingurni the methodological basis of evaluation can also be the theory of intelligence. The American psychologist Howard Gardner proposed a theory that was recognized worldwide as one of several theories. He distinguishes such types of intelligence as linguistic, logical-mathematical, spatial, musical, kinesthetic (for example, the ability to control your body in sports or dance), personal [4].

It should be assumed that this "fully developed person" includes all these types of intelligence developed on the same level as about intelligence. How this fits into reality and whether it is good for a society with a high labor qualification is a separate research topic. The pro tafakkur style of thinking is an ideological contextual formation that embodies tradition and renewal. It constantly demonstrates new plans, projects, systematic, integrative, plyuralistic, optimistic, euristic and creative approaches.

Intellect and thought are closely related, but not the same. Proektiv intellect-the ability to develop intellect, morality and physique and the ability to carry out project activities (project readiness). The development of human project readiness occurs both slowly and sharply throughout the life of a person, and proektiv thinking, on the one hand, is the function of the mind, on the other hand-the way of forming the mind. If intelligence is state, static in the short term, then thinking is always a process, dynamic. Our thinking is confirmed by the interpretation of Jerome Bruner, who believes that it is impossible to perceive the essence and types of thinking without thinking, distinguish six variants of the object, figurative, sign, symbolic thinking and their combination [5.782].

Proektiv style of thinking a person forms such a mosaic of imaginations, principles and norms of rationality formed by projects in his mind, in which he acquires a unique, holistic image, performs the functions of directing, combining, generalizing, evaluating in relation to traditional and new views. From this definition it follows that individuality, individuality and especially innovation in the projektiv way of thinking, which denotes a specific form of the thinking process, a whole, are first and foremost a conspicuous feature.

The choice of reality as a result of proectional thinking goes beyond the logical connections generated by simple "reasoning". Common sense is the generalization of heredity and social experience, based also on previous invidiual experience. On the other hand, proektiv thinking is a "discovery"beyond the limits of everyday life. Current events are interpreted in a more general context. That is, it is a large-scale choice that carries out the conscious attitude of the individual.

Logical aspects of projektiv style of thinking:

First, proektiv thinking is not based on linear logic. As I said earlier, this is the synthesis of different scales of abstraction in the created spiritual reality, that is, the result of the multi-dimensional quantification of the original reality;

Secondly, the exception of proektiv logic goes beyond normal to the third daily life principle. Indeed, a large amount of abstract can be combined with statements that contradict everyday logic. This is a consequence of the fact that contradictory concepts

at the daily level can be combined if additional dimensions of spiritual reality are opened when abstraction, characteristic of proektiv thinking;

Third, we can call project logic synthesis, based on the above. From the point of view of greater context, it is possible to combine dependent structures according to certain criteria that ensure their interaction. These complementary criteria express the emergence of new spiritual dimensions in the consideration of reality. In addition, the level of synthesis that geterogen ideas can, in principle, not limited. The higher the level of abstraction in Proektiv thinking, the more heterogen factors can be combined in the projected spiritual reality;

Forth, by the way, projective thinking is based on an analysis of reality. The less egoistic aspirations to fame and fortune, the greater the scale of proektiv thinking;

Fifth, projective thinking is like overcoming the Hegel's theorem of the imperfection of the description of closed systems. The project approach "opens up"systems of images and concepts that are closed and self-visible and move to the general levels of images and concepts. Proektiv thinking creates a spiritual hierarchy, so every subsequent step of understanding the problems is also a new selection step.

Proectional thinking is always a synthesis of different and even contradictory meanings in the unifying context of the design plan, placing any phenomenon in a general context. And, of course, he takes on the active, world-forming role of thought in the creation of reality and its expression (logos).

The proektiv thinking style in innovation education is an important gnoseological weapon at a time when radical reforms are being carried out in the field of education, while in the conditions of market economy.

Innovative thinking is a multi-stage cycle process, in which there are differences in the beginning, ascent and completion, time intervals. The role and importance of innovative thinking in science and practice is largely dependent on the development of evristic methods and approaches. [6. 571] By today, the protective style of thinking and innovative education of the “architect of independence” is recognized by the world community.

Proektiv thinking in innovation education is an important gnoseological weapon at a time when radical reforms are carried out in the field of education, while in the conditions of market economy. Innovation style of thinking is a form and system of social activity that focuses on shortening the time it takes for specialized enterprises and their renewal of new ideas, values and projects aimed at meeting the new needs and problems of man. [7. 95] The role and importance of Proektiv and innovative thinking style in science and practice is largely dependent on the development of evristical methods and approaches.

The logical aspects of the proektiv style of thinking are also marked by the innovation update in the science. The introduction of innovative aspects of thinking, science and practice give an opportunity to formulate modern thinking and integrate it into the minds of specialists.

The logical aspects of the projective style of thinking, its connotative essence, its social necessity in the conditions of the rise of the New Uzbekistan, the main methodological task of the professional qualification of young people.

As a necessary condition for the implementation of projects, proektiv mentality has always existed, on the other hand, in different historical conditions it has been and has developed in a different way, together with the science and culture of society. Hence, the proektiv style of thinking in innovation education is an important factor in the renewal of society that carries out qualitative changes in social spheres such as science and education in particular.

Based on the above, we come to the following conclusions:

1. The concept of " proektiv thinking"" has not only the right to exist, but is also very necessary at a strong level of the practical project approach. It should always be remembered that the project practice can carry out different types of intelligence, including areas where there is no intelligence. Therefore, project management standards are very necessary and risk management is an integral part of them.
2. In the process of development and Ascension, a person goes through different stages of thinking – visual-effective, visual-figurative, verbal-logical stages. It should be noted that at its core, any thinking can be on the basis of a project. In older people, previous types of thinking do not disappear and can even prevail.
3. 3. If verbal and logical thinking occurs according to the template, then the ability to use knowledge should be attributed to the lower level of thought Development - the reproductive type of project thinking; if the use of logical knowledge occurs in a new situation, in conditions of uncertainty and risk, then decision-making should be made on the basis of a fertile.
4. Projectiv thinking is a complex process, we can achieve it through more and more qualitative teaching of the subjects of philosophy, logic, psychology to young people from maturing times. And it is desirable to teach in educational institutions such subjects as logic, philosophy, style of thought, philosophy of science, futurology ,ualualistics in accordance with their specialty.

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THEORETICAL PROBLEMS AND SOLUTIONS FOR CREATING EDUCATIONAL MATERIALS FROM GENERAL AND SPECIALIZED SUBJECTS

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Annotatsiya. Maqola orqali hozirgi davr sharoitida hamda zamonaviy ta’lim talablarini bajarishda o‘quv adabiyotlarning yangi avlodi pedagogik va axborot texnologiyalari asosida yaratilish shakllari haqida ma’lumotlar keltirilgan. Pedagogik va axborot texnologiyalari asosida yaratilgan darslik boshlang‘ich sinf o‘quvchisining mustaqil bilim olishga va o‘rganishiga qaratilgan tahliliy natijalar yoritilgan.

Kalit so‘zlar: Yashil qo‘riqchilar, posbonlar, ta’lim standarti, texnologiyaning roli, talim mazmunini yangilash,dizayner, dizaynerlik ijodkorligi, yangi avlod adabiyotlar.

Аннотация. В статье представлена информация о формах создания нового поколения учебной литературы на основе педагогических и информационных технологий в современных условиях и при реализации современных образовательных требований. Учебник, разработанный на основе педагогических и информационных технологии дает возможность ученикам начальных классов самостоятельного обучения и усвоения представленного материала.

Ключевые слова: зеленые охранники, образовательный стандарт, роль технологии, обновление образовательного контента, дизайнер, дизайнерское творчество, литература нового поколения.

Abstract. The article provides information on the forms of creation of a new generation of educational literature based on pedagogical and information technologies in the conditions of the present era and in meeting the requirements of modern education. The textbook created on the basis of pedagogic and information technologies has highlighted the analytical results aimed at independent learning and learning of primary school students.

Keywords: Green guardians, guardians, standard of education, role of technology, renewal of educational content, designer, designer creativity, new generation literature.

Introduction. Reforms in the field of education in Uzbekistan are showing their results today. New higher education institutions are being established, and their material and technical bases and educational and methodological support are being

updated. Also, scientific research aimed at the development of general secondary education is being conducted and pedagogical experiments are being conducted.

Tasks were set before us, focusing on issues such as fundamentally improving the quality of personnel training in our country, critically analyzing and updating educational standards and curricula in schools, secondary, special, vocational and higher education institutions taking into account modern requirements. In order to fulfill these tasks, the work on providing the educational system with new textbooks, improving educational standards and educational programs is going on rapidly.

The role of "Technology" is incomparable in guiding students in higher education institutions to work effectively in all areas of the economy in the future, to choose a profession consciously and freely.

Before we dwell on the problems of creating educational literature on "Technology", we have provided an analysis of scientific research and opinions of scientists aimed at developing Technology and its teaching methodology.

According to the concept of O. Tolipov, development of general and professional skills and qualifications of students based on new pedagogical technologies, updating of educational content, improvement of the educational process based on new methods and tools, implementation of experimental tests and development of methodological recommendations are a necessary condition for reforming the educational system [1].

In fact, it has been shown in the national personnel training program that one of the most important tasks is to organize the educational process of all types of education on the basis of pedagogical and information technologies.

B. Joraeva stated that in the conditions of current market relations, improving the preparation of students for work can be based on the wide and active use of practical experiences of involving students in various forms of the production process that have become traditional, as well as the development of its new and sufficiently promising forms [2].

One of the urgent tasks of today is to prevent repetition or omission of subjects by ensuring the coherence and consistency of educational programs among the types of education, and it is necessary to coordinate the educational programs developed for vocational colleges with the subjects taught at the level of general secondary education.

According to Sh.S. Sharipov and Sh. Abdurakhimov, one of the main tasks of unity in improving the professional training of students is to ensure inter- and intra-discipline connection and interrelationship. The content of Technology in the 1st-4th grades of higher education institutions is the basis for 5-Primary education courses, and the knowledge and skills acquired in the 5th-7th grades serve as the basis for training specialists in vocational colleges in the 7th-9th grades. The main purpose of labor lessons in grades 8-9 is to provide students with information on various professions in the national economy, to guide them to choose the right profession according to their inclinations [3].

In our opinion, content renewal of the current traditional education in the field of technology and its teaching methodology, organization of the educational process on the basis of pedagogical technologies, didactic improvement and processing of the educational material are important tasks.

If we analyze the scientific research conducted on the development of the science of technology and its teaching methodology in higher education institutions, in the candidacy work of B.B. Doniev, the specific features of the professional skills of the teacher of technology are revealed and a model of teacher activity control is developed, its content and methodology are explained. [4].

R. M. Mukhambetova's research revealed the content and specific features of educational activities related to folk crafts, and provided scientific methodical recommendations on ensuring interdisciplinary communication and guiding students to consciously choose a profession [5].

The organizational-pedagogical system of developing design creativity of teachers in Technology was developed in I.N. Islamov's dissertation work. The criteria for determining the level of development of students' design creativity in technology classes are scientifically based [6].

Technology classes organized in the higher education institution are distinguished by the fact that they can provide students with complete information about the technological processes taking place in production, economy, industry and agriculture in comparison to other subjects.

In the scientific work of N.R. Ashurov, the pedagogical conditions of using national values in improving the preparation of students for work and profession were studied [7].

S. Umarov's dissertation researched the historical development and current state of using folk crafts as national values in preparing students for work and profession, and highlighted the possibilities of training through national values in preparing students for work and profession [8].

Also, in N. Jumaeva's researches, the didactic issues of determining the level of formation of work skills among students were revealed.

E.Azimova studied the integration of the content of "Technology" and "Drawing" subjects in the general secondary education system.

I. Yu. Aripov researched the problems of directing students to artistic and craft professions in the process of technology.

A.A. Turgunova's works are focused on the role and importance of labor education in the national traditions of the people.

A.R. Khodjaboev's fundamental research is directed to the development and practical implementation of teaching-methodical complexes in the training of teachers of labor and vocational education.

U.N. Nishonaliev developed the history of the development of professional and personal qualities of the technology teacher and the ways of future development.

O'.T. Tolipov's scientific research is devoted to the problems of development of general labor and general professional skills and qualifications of future pedagogues-teachers, and the possibilities of using pedagogical technologies.

A.I. Toshev studied the issues of environmental education on the basis of "Green Guardians" and "Guardians" student associations in Technology and obtained scientific results.

The analysis of these works shows that most of the works are devoted to improving the quality of technology teacher training, teaching schoolchildren to work, forming their practical skills, using national traditions and values.

It should also be noted that one of the main features of technology is the fundamental basis for guiding schoolchildren to the profession. We have also conducted a number of researches in this area.

We have recommended the following forms of career guidance in the implementation of technology and its teaching methodology.

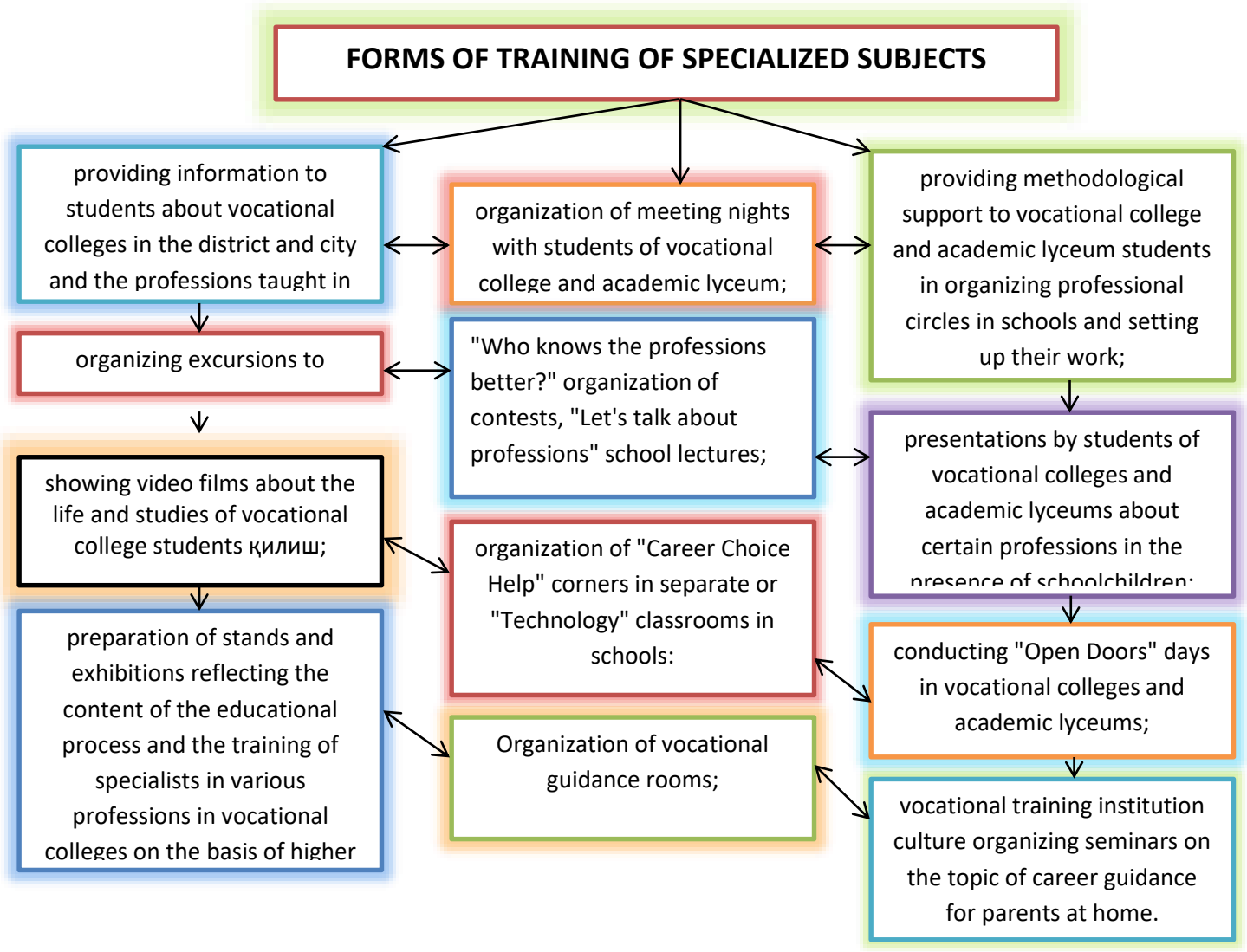

Figure-1. Scheme of forms of career guidance

In addition, to explain to the students the universal and historical significance of the creative works carried out in Uzbekistan, to provide information about the labor achievements and traditions of the older generation.

This work will be carried out in the following directions in the first half of the academic year:

- introducing the newly admitted students to the educational conditions in the educational institution;

- holding evenings on the theme "My future profession" with the participation of labor veterans;

- watching protected video films about professions;

- visiting historical places and monuments in the city or district;

- meeting of newly admitted elementary school students with college or academic lyceum graduates;

- Conduct questionnaire surveys on the topic "My high school or college".

In order to carry out these works, first of all, educational and methodological support and methodical instructions for higher education institutions should be developed.

In our opinion, it is necessary to establish a wide cooperation of higher educational institutions and vocational colleges and to provide this direction with educational and methodical literature in order to ensure coherence in the career orientation of elementary school students.

The effectiveness of the results of any directions for the development of "Technology and its teaching methodology" in higher education institutions depends on the provision of educational and methodological literature. Therefore, one of the main directions of improving the quality and effectiveness of technology and its teaching methodology is the provision of modern textbooks, methodical instructions, and electronic educational resources.

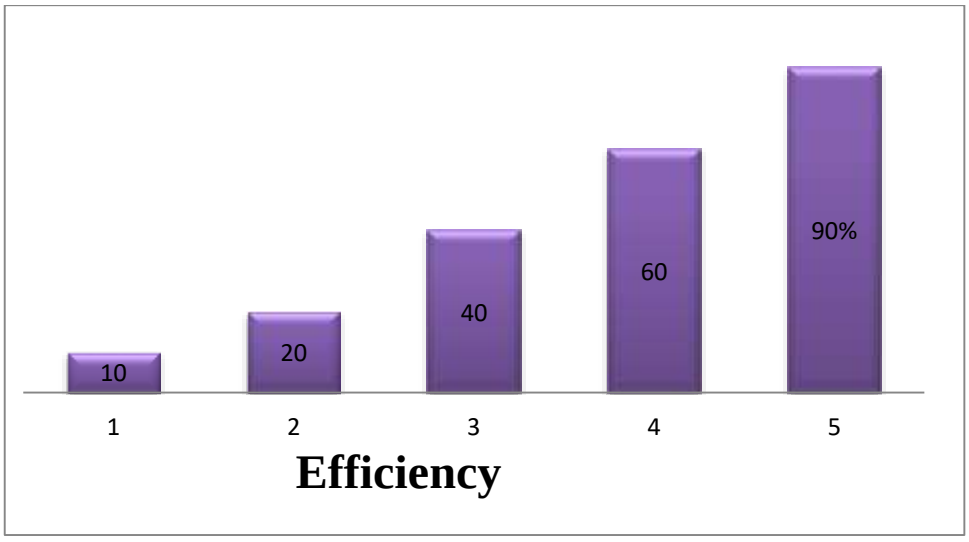

Figure-2. Scheme of efficiency of e-textbooks in education

Educational literature is not only a source of educational, scientific-technical and socio-political knowledge, but it is a powerful factor in educating young people in spiritual, spiritual-aesthetic, socio-economic, patriotic, economic-political, humanitarian and other aspects [10].

Based on the new state educational standards introduced in the continuous education system in accordance with the requirements of the national model of personnel training, the main tasks of the "Concept of creating a new generation of educational literature for the continuous education system" to create a new generation of educational literature are scientific-ideological, methodological-didactic, psychological-pedagogical, sanitary- development of hygienic requirements, accurate

definitions of their existing forms and types for the purpose of correct and rational use of educational literature, and determination of the scope of strategic issues for the implementation of programs on the preparation of modern educational literature on the scale of our country.

The conducted analyzes showed that in the following years, scientific studies and researches were conducted in the following two directions for the creation of educational literature for the continuing education system:

- Fundamental research aimed at solving problems related to the theory of creating a modern generation of educational literature.

- The analysis of scientific research works focused on the problems of development of the specialty science of technology and its teaching methodology shows that almost no research has been conducted on the development of textbooks and educational materials based on the modern educational requirements of the specialty science of technology and its teaching methodology. The creation of high-quality educational literature and its application to the educational process are of great importance in improving the quality and effectiveness of education.

- Case studies on the process of creating and publishing educational literature. A number of methodological works of practical importance have been carried out in this direction. Recommendations of scientific significance have been developed.

- New textbooks for higher education institutions were created, published and put into practice.

- We studied the opinions of scientists, pedagogues and researchers about the textbook. In accordance with the concept of creating a new generation of educational literature for the continuing education system, educational and methodological literature is defined as follows [11]:

The textbook is a publication defined on the basis of the state educational standard, curriculum, methodology and didactic requirements, instilled with the idea of national independence, the topics of a specific academic subject are fully covered, aimed at perfect mastering of the relevant subject fundamentals, and taking into account the possibilities of use in related educational areas:

A study guide is a publication that partially complements a textbook, is compiled according to a specific subject program and provides a deep understanding of the fundamentals of the subject, and is intended to cover certain chapters and sections in a broad way or to solve practical exercises and trainings;

Methodical manual is intended for teachers, it contains recommendations about the purpose of a lesson, teaching tools and methods of their use, content of the lesson, practical exercises, additional tasks, etc.

S. G. Antonova divides educational literature into programmatic-methodical, educational-methodical, teacher-oriented and additional literature and gives her definitions for each of them [12].

In the scientific literature, the textbook is also considered as a resource for introducing elementary school students to the fundamentals of science.

In his scientific works on the theory of creating educational literature, the textbook is defined as follows: "The textbook recommends the teaching material reflecting the content of the subject and the methodology of working with it, and

provides the teacher with the methods of conveying and teaching the teaching material to the primary school students, and the primary school student with the methods of learning and mastering. In other words, educational goals are embodied in the textbook in the form of content and methods" [13].

The textbook is the best auxiliary didactic tool for the teacher to fulfill many educational requirements and strengthen the learning material. Each topic of the newly created textbook contains its own integrated and complete educational material.

According to some researchers, "Textbook is a tool for teaching the scientific foundations of science, in which the methodology of teaching a subject is presented to some extent" or "Creating a textbook is designing the educational process."

V.V. Kraevsky and I.Ya. Lerners expressed the opinion that the textbook serves to organize the entire teaching process, in which not only the activity of the elementary school student, but also the activity of the teacher is programmed.

In some scientific works, "The textbook is the core of the educational process and the model of the educational subject, and the knowledge, skills, and qualifications covered in it are considered the minimum set by the state educational standard." [14].

Russian theoretical scientist V.P. According to Bespalko: "The textbook is an informative model, which reflects the following four elements of the pedagogical system: teaching goals, teaching content, selection and development of didactic processes, organization of teaching forms. In this case, the textbook is one of the teaching tools that take into account the possibilities of the primary school student.

Also, in scientific works, "Textbook is a material object, which contains information in a specific systematic form. These include scientific knowledge, knowledge of methods of activity in accordance with the goals, tasks and contents of education, materials modeling the interaction between the teacher and the learner.

E.Yangabaeva said that the textbook is the main textbook designed for primary school students to actively and consciously acquire the knowledge specified in the state standard and curriculum. A fully created textbook consists of a set of information model, this model reflects the four important components of the pedagogical system consisting of teacher-textbook-learning process-primary student and allows to put them into practice. In this case, the textbook as a technical means of teaching should take into account the capabilities of the primary school student, that is, its consumer.

A number of authors have expressed the opinion that the textbook is the main source of knowledge in a specific academic subject, and it is intended for independent acquisition of knowledge by elementary school students.

A textbook is a primary school student that not only learns the specific content of a particular academic subject, but also learns to learn from it, to generalize the learned knowledge and compare the accuracy of the acquired knowledge, and to apply it in practical skills. The textbook should be conceived as a unit of a tool for mutual cooperation between a teacher and a primary school student. The textbook is the core of the educational tool complex, around which other educational tools are grouped [15].

R. Safarova looks at the textbook as an informative model of the pedagogical system and emphasizes that the new generation of textbooks should present a high worldview as an expression of decision-making in young elementary school students. According to the author, new textbooks and textbooks are rich in information, able to

clearly express the content of education, oriented to the personality of the elementary school student, have a specific genre, fluency of the educational material, expressiveness of the statement, pedagogical and psychological ideas are broken, methodologically oriented, specific didactic apparatus, organic, it is of particular importance as a means of education with its communicative and coordinating function [14].

According to the concept of creating a new generation of educational literature for the continuous education system, the modern generation of educational literature created at the moment should be directed to the development of the individual. Because today the personality of the elementary school student is the central figure of the educational process. Also, the progress of science, technology and technology requires updating the content of education. This requires the creation of textbooks based on person-oriented technologies.

At this point, it should be noted that the daily updating of science, techniques and technologies and the increase of information require primary school students to strive for new knowledge in the future and to acquire independent learning skills.

According to some researchers, in modern educational conditions, the textbook should be a tool that guides the teaching process and creates an opportunity for independent learning [15].

According to Sh. Kurbanov, the current teaching process should be directed to the formation of independent education and learning skills of elementary school students and to arouse their interest in learning. Otherwise, it will have a negative effect on the development of the personality of the students and reduce their desire and desire to continue studying at the next stages of education.

According to the researchers, the following are aimed at teaching primary school students to use educational literature independently:

- formation of primary school students' ability to check their knowledge;
- strengthening the knowledge gained during the lesson by working with the book at home;
- to teach primary school students to read according to the plan, to use schemes and tables, and to write abstracts in order to understand the content of the educational material.

In the textbook, primary school students need to have visual materials and practical exercises for primary school students to acquire new knowledge.

According to foreign scientists, "The textbook should develop the skills of independent work in primary school students, recommend different teaching methods, and provide practical application of the acquired knowledge" [16]. ?

Currently, one of the methods of independent education is to give tasks related to independent work with educational literature and their implementation should be constantly monitored by the teacher.

According to Q.T. Olimov, the new generation of textbooks should be aimed at independent acquisition of knowledge by elementary school students, formation of skills and competencies in them, independent search and finding of necessary material, and teaching of application in practical activities and development of creative abilities [18].

A modern textbook should include "the program of independent work with the textbook and the system of self-assessment of primary school students" [17].

It should also be noted that achieving independent mastery of the educational material, but also through the textbook, should serve to activate the cognitive activity of primary school students.

Conclusion. In our opinion, "Technology" textbooks should be aimed at the development of knowledge, skills and abilities, creative abilities of elementary school students, full coverage of work methods, provide an opportunity to guide elementary school students to a profession and independent education, ensure practical application of acquired theoretical knowledge, self- assessment should be created on the basis of pedagogical and information technologies, including methods and materials.

By introducing problematic questions and problems, exercises and creative assignments in the "Technology" textbook, it is possible to increase the need and interest in independent acquisition of knowledge and skills among elementary school students.

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