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Contact information

Website: <https://sconferences.com>

E-mail: info@sconferences.com

Content

Agricultural sciences

- Hacıyeva A.A., Saliyeva V.I., Abbaszade N.A.** 3
THE MECHANISM OF GUARANTEEING THE ECONOMIC SECURITY OF AZERBAIJAN

Biological sciences

- M. Ashurova** 6
GROWTH POSSIBILITIES OF BACILLUS AMYLOLIQUENS HAPH2 IN A SALTY ENVIRONMENT HALOXYLON APHYLLUM (MINKW) ILJIN

Economic sciences

- Aliyev A.M., Aliyeva M.L., Mammadov SH.N.** 9
DEVELOPMENT PROSPECTS OF MANAGEMENT SYSTEMS IN CONSTRUCTION COMPANIES
- Aliyeva Ruhangiz Tofig, Aliyev Farid Zaur** 12
INTERNATIONAL EXPERIENCE OF USING RENEWABLE ENERGY SOURCES
- Mammadov Mahabbat Ashir, Ganiyev Khanlar Ilgar** 15
ANALYSIS OF RISKS IN THE EVALUATION OF INVESTMENT PROJECTS
- Statsenko Olga** 26
PROSPECTS FOR THE DEVELOPMENT OF NUCLEAR ENERGY IN KAZAKHSTAN

Mathematical sciences

- Guliyev Hamlet Farman, Nasibzadeh Vusala Nazim** 29
ON OPTIMIZATION METHOD FOR WAVE EQUATION IN A PARALLELEPIPED
- Amanzhol Tansholpan, Nurbayeva Dilara** 32
METHODS OF SOLVING PROBLEMS RELATED TO THE VOLUME AND SURFACE AREA OF ROTARY BODIES IN THE HIGH CLASS GEOMETRY COURSE

Medical sciences

- Pruts Halyna, Mochalov Iurii, Guzo Nutsu, Mykhajlychenko Bohdan, Yakovenko Mykhailo, Mikhlin Roksolana** 39
PROBLEMS WITH ORAL MUCOSA INFLAMMATION AMONG PATIENTS WITH REMOVABLE DENTURES
- Guliyeva Sevinch** 41
THE INFLUENCE OF SPORTS PHYSICAL LOADS ON THE ADAPTIVE CAPABILITIES OF THE CARDIOVASCULAR SYSTEM IN ATHLETES

Pedagogical sciences

- Kenzhebayeva Zhumagul Tolegenovna** 45
INNOVATIVE EDUCATIONAL ENVIRONMENT AS A CONDITION FOR IMPROVING THE PROFESSIONAL COMPETENCE OF A TEACHER

Philological sciences

- Rzayeva Qerenfil Zeygam** 49
THE INFLUENCE OF VARIOUS LITERARY TRENDS ON THE DEVELOPMENT OF OUR POETRY AT THE END OF THE 20TH CENTURY
- Sura Seyid** 54
NEW PROFESSIONS IN INTERNET MEDIA: AUTHORIZED AUTHORIZING, MULTIMEDIA EVENT, LONGRID, STORYTELLING

Philosophical sciences

- Anatolii Meleshchuk** 58
KANSO (簡素) AS A EXPRESSION OF AESTHETIC REALISM IN ZEN-BUDDHIST CULTURE

Technical sciences

- Nelin Yevhen Oleksandrovych, Kasyanov Volodymyr Volodymyrovych** 62
APPLICATION OF INFORMATION TECHNOLOGIES FOR THE DESIGN OF LAND AND PROPERTY COMPLEX

Agricultural sciences

THE MECHANISM OF GUARANTEEING THE ECONOMIC SECURITY OF AZERBAIJAN

Hacıyeva A.A.

Saliyeva V.I.

Abbaszade N.A.

senior teacher

Azerbaijan State Agrarian University

Azerbaijan, Ganja

Abstract

In addition to protecting the national security of each country, it is also necessary to ensure its economic security. Economic security ensures the protection of the national-economic interests of the states, the effective realization of the existing economic potential of the country, and the sustainable pace of development of the country in a period of rapid development of the globalization process. The purpose of the study is to improve the mechanism of ensuring economic security in accordance with the current state of the country's economic development. The socio-economic development of the state, as well as the country's GDP and its per capita volume were analyzed in the article.

Keywords: *economic security, national security, gross domestic product, socio-economic development, economic reform.*

Introduction

The national security strategy of Azerbaijan consists of a set of ideas aimed at protecting, managing and directing the vital interests of the Azerbaijani state into the future. The security of each nation-state is related to regional and global security. Generally speaking, the main goal of the state's security policy is to protect and provide a high level of vital national interests of the country during contact with the outside world. The national interests, national security and prestige of the state are taken into account in the world as a subject of international law, and are ensured with the help of the state's own internal and external resources. It is impossible to ensure national security without ensuring the country's economic security. Observation, analysis and comparison methods were used in the research work. The information base of the study is made up of the materials of the State Statistics Committee of the Republic of Azerbaijan and the Ministry of Economy.

The fact that national interests are at the center of ensuring the country's national security is a characteristic feature of all nationally independent states, including Azerbaijan, and this is an objective factor. It is conditioned by all areas of the nation's life. The essence of national interests is the reconciliation of national interests with the interests of all world states and should find its expression in the policies of these states.[3,p 21]

The level of economic security, both national and regional, can be assessed through a system of indicators. On the one hand, this approach provides a method for predicting and assessing threats that may spring up in the future, and on the other hand, develop a set of measures aimed at preventing threats [4]. The World Economic Forum showed that the key national indicators are: • annual inflation rate; • unemployment rate; • amount of federal budget deficit; • amount of external debt of a country; • amount of tax burden on the economy and other indicators [4].

The state of social sphere largely determines the level of economic security, ways to provide and strengthen it. A significant threat to economic security in the social sphere is sharp income disparities. It is common for all countries of the world and should not be too large, though. Based on global experience, when the value of this indicator is 8 times higher, society enters a zone of social tension and instability. This increases the likelihood of social conflicts [6]

The main directions of socio-economic development

Economic security can be ensured by constantly increasing the socio-economic development of the country. In this regard, economic security is such a basic aspect of the economy that it must ensure its true and honest and effective provision, as well as the national interests and interests of the country.

The special role of the state in socio-economic development, the efficient and intelligent integration of oil wealth into dynamic development, the high volume of state investments, the main goals of the first stage of economic construction - the strengthening of state sovereignty and national security by restoring the historical geographical borders of the country, ensuring internal socio-political stability and social consolidation played an important role in making.

Despite the significant impact of the pandemic on the country's export revenues in recent years, as a result of timely measures, the national economy was adapted to the new global realities in a short time, macroeconomic stability was ensured, and Azerbaijan became one of the countries least affected by this crisis.

The state of Azerbaijan is entering a qualitatively new stage of strategic development in the post-pandemic and post-conflict period, covering the years 2022–2030. In this strategic period, through new generation structural and institutional reforms, modern and sustainable sources of economic growth are set in motion, the innovation direction and financial stability of the national economy is further strengthened, and the country's economy is effectively integrated into the global value chain. is determined to realize new goals in the direction of construction.

It is for this purpose that "Azerbaijan–2030: National Priorities for socio-economic development" was approved and "Socio-economic development strategy for 2022–2026" was prepared based on these priorities. The implementation of this Strategy will lead to major changes in the face of the country's economy by the end of 2026, economic growth will be formed on the basis of completely new quality factors, growth rates will accelerate, especially in priority areas, and the stability of the economy and employment will be strengthened. [5]

In modern conditions, the main direction of economic and social development is to create the abundance of material and spiritual blessings necessary for living and to confirm its more significant distribution. Social spheres essentially create moral values. .[2, p 121]

The reforms carried out in the country have caused fundamental quality changes in the economy, dynamic economic development has been ensured. Appropriate measures have been taken in the direction of ensuring the economic development of the regions, further raising the social welfare and living standards of the population, and the development of the country's economy, especially the non-oil sector. In order to ensure the employment of the population, new jobs, enterprises, infrastructure facilities, etc. was created.

In 2022, the number of labor force in the country increased by 607.0 thousand people compared to 2010 and reached 5194.4 thousand people, of which 4901.1 thousand people are employed in the economy, and 293.3 thousand people are unemployed. As a result of reforms carried out in the country's economy in recent years, significant positive changes have been achieved in the labor market. So, if in 2010 the specific weight of employees in the public sector was 26.4 percent of the total number of people employed in the economy, in 2022 this indicator decreased to 21.9 percent, while the number of employees in the non-state sector increased by 1.2 times during this period. [9]

In 2022, 2,509.9 thousand people or 51.2 percent of the total number of people employed in the economy worked in the fields of production (agriculture and fishing, industry, construction), and the number of people employed in the service sector was 2,391.2 thousand. which made up 48.8 percent of the employed population. In 2022, 1738.7 thousand people or 35.5 percent of the total number of people employed in the economy fell to the share of wage earners. Most of the wage earners worked in large and medium-sized enterprises. [9]

The socio-economic development of regions, which is one of the important components of the sustainable development strategy successfully implemented in our republic, has become a strategic document that promotes serious development dynamics and qualitative changes in all areas of the socio-economic life of our country. [1, p 25]

In order to improve the socio-economic situation of the regions, President Ilham Aliyev has adopted a series of State Programs (2004-2023) on the Socio-Economic Development of Regions in the Republic starting from 2004. The works carried out within the framework of the State Programs provided serious support to the general socio-economic development policy implemented in the country, and as a result, in 2004-2018, the gross domestic product (GDP) increased by 3.3 times in real terms, including the non-oil sector by 2.8 times. During this period, the industry grew by 2.6 times in real terms, including non-oil industry by 2.4 times and agriculture by 1.7 times. [7]

One of the main factors in ensuring economic security is macroeconomic indicators, which are of great importance in the economy of every country. Each state determines this according to its national interest.

According to the Statistics Committee of the Republic of Azerbaijan, in 2023, the gross domestic product of 123.0 billion manats or 1.1 percent more than the previous year was produced by enterprises, organizations and individual entrepreneurs operating in the country. The added value in the oil and gas sector of the economy decreased by 1.7 percent, and in the non-oil and gas sector, it increased by 3.7 percent. 40.5 percent of GDP production is industry, 10.0 percent trade; vehicle repair, 6.2 percent transport and warehousing, 6.2 percent construction, 5.5 percent agriculture, forestry and fishing, 2.2 percent tourist accommodation and public catering, 1.7 percent information and communication fields, 18.6 percent fell to other sectors, net taxes on products and imports made up 9.1 percent of GDP. The GDP per person of the population was equal to 12114.5 manats.[8]

The result

The specific weight of GDP in our republic continues to grow steadily. Taking into account that after the years of independence, population growth has become massive, and despite this, the volume of GDP per capita continues to increase year by year. The main task facing the Azerbaijani state in the process of implementing economic reforms is to choose the optimal strategy for their implementation. Of course, as in every country, the concept of economic reforms in Azerbaijan was developed, implemented and is still being carried out based on its historical development, as well as the characteristics of its economic and social situation.

Without a scientifically evaluated economic policy in the country, it would be impossible to ensure the appropriate development of the national economy and its security. , has the strongest and most reliable guiding and regulatory role in the economic policy implemented by the state, in socio-economic development, and in ensuring economic security. In this regard, the economic mechanisms that have their own place and role in ensuring the socio-economic formation, development and security of the country in the market conditions should be constantly improved by being set in motion in a holistic and systematic manner.

The above-mentioned tools of the mechanism for ensuring Azerbaijan's economic security will create a solid foundation for sustainable economic development in the long term.

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Biological sciences

GROWTH POSSIBILITIES OF BACILLUS AMYLOLIQUENS HAPH2 IN A SALTY ENVIRONMENT HALOXYLON APHYLLUM (MINKW) ILJIN

M. Ashurova

Samarkand State University named after Sharaf Rashidov, Samarkand, Uzbekistan

Abstract

This article presents the results of experiments aimed at determining the growth of the *Bacillus amyloliquens* HAPH2 strain, considered an endophytic bacterium isolated from plants of the *Iljin Haloxylon Aphyllum* (Minkw) plant, widespread in the southwestern parts of Uzbekistan, in a salty environment with CaCO_3 . The information presented in the article will serve to develop technologies for growing crops in our country in the future.

Annotatsiya

Ushbu maqolada O'zbekistonning Janubiy-G'arbiy qismlarida keng tarqalgan *Haloxylon aphyllum* (Minkw) *Iljin* o'simligidan ajratib olingan endofit bakteriya hisoblangan *Bacillus amyloliquens* HAPH2 shtamining CaCO_3 li sho'rlangan muhitda o'sishini aniqlashga qaratilgan tajribalar natijalari bayon qilingan. Maqolada keltirilgan ma'lumotlar, kelajakda yurtimizda qishloq xo'jalik ekinlarini yetishtirish texnologiyalarini rivojlantirishga xizmat qiladi.

Аннотация

В данной статье изложены результаты экспериментов, направленных на определение роста штамма *Bacillus amyloliquens* HAPH2, считающегося эндофитной бактерией, выделенной из растения *Iljin Haloxylon Aphyllum* (Minkw), широко распространенного в юго-западных частях Узбекистана, в соленой среде с CaCO_3 . Информация, представленная в статье, послужит развитию технологий выращивания сельскохозяйственных культур в нашей стране в будущем.

Keywords: *Haloxylon aphyllum* (Minkw) *Iljin*, endophytes, bacteria, *B. amyloliquens* HAPH2, CaCO_3 , LB(Luria Bertani)

Kalit so'zlar: *Haloxylon aphyllum* (Minkw) *Iljin*, endofit, bakteriya, *B. amyloliquens* HAPH2, CaCO_3 , LB(Luriya Bertani).

Ключевые слова: *Haloxylon aphyllum* (Minkw) *Iljin*, эндофит, бактерии, *B. amyloliquens* HAPH2, CaCO_3 , LB(Лурия Бертани)

Today, less than one billion hectares of the world are under primary salinity, more than 77 million hectares under secondary salinity, and 58% of secondary salinity areas are irrigated areas (<https://wad.jrc.ec.europa.eu/2022>) while in Uzbekistan, 70% of the soil is salted to varying degrees, and these percentages are increasing from year to year. Saline soil plants have a negative impact on serious physiological and metabolite processes, especially on agricultural crops. First, the increase in salt in the soil increases the osmotic pressure of the soil, and the absorption function of the root of plants decreases. Secondly, excess salts accumulate in plants. Salts that do not have a negative effect on this also accumulate in the cell and poison the plant. These include sodium chloride (NaCl) sodium sulfate (Na_2SO_4) and calcium carbonate (CaCO_3) salts.

On a global scale, symbiotic, antagonistic, relationships of plants and microorganisms have been studied by scientists on a global scale, and it has been mentioned that establishing a connection between plant and microorganism facilitates their ability to fight various stresses. In this regard, endophytic microorganisms - having passed a certain cycle of their life in plant tissues, have been found to improve the plant's immune system, their broad-spectrum action against various pathogenic microorganisms and pest insects. [1] endophytic bacteria have several advantages over rhizosphere bacteria. They penetrate plant tissues and come into direct contact with them, resulting in easy cell-to-cell communication and are considered benefits for the plant [2]

An example of such an endophytic bacterium is the *Bacillus amyloliquefaciens* HAPH2 strain isolated from black saxaul (*Haloxylon aphyllum*).[3]

When we grew the *Bacillus amyloliquefaciens* HAPH2 strain, LB (Luria Bertani) was grown in nutrient media. To grow the *Bacillus amyloliquefaciens* HAPH2 strain in CaCO_3 environments, we first

prepared a solid LB (Luria Bertani) nutrient medium. To do this, we put (order g/L): 100 ml of distilled water, trypton-1 g, agar - 1.5 g, achiqi extract - 0.5 g and CaCO_3 respectively in each nutrient medium. We made the nutrient medium in 5 flasks and salt CaCO_3 to each flasks 1%, 2.5%, 5%, 7.5% and to make 10% li, we made a feed medium by adding 1 g, 2.5 gr, 5 g, 7.5 g and 10 gr to 100ml of water. We made the feed environment pH between 7.0-7.4.



(1-image)

After that, we sterilized the feed medium in the autoclave for 1.5-2 hours.

After that, we put ready-made sterile feed into sterile petri dishes and planted *Bacillus amyloliquefaciens* HAPH2 in Laminar boxing, following sanitary hygiene and laboratory rules. E to the same feed environment for a control that stored different concentrations. we also planted colini.

Then we put it in the thermostat and observed. (2-image)

Table -1.

Colonization of *Bacillus amyloliquefaciens* HAPH2 strain in different concentration CaCO_3 stored food environment

Strain	1%	2,5%	5%	7,5%	10%
Control E-coli	+++++	++++	++	-	-
<i>Bacillus amyloliquens</i> HAPH2	+++++	+++++	++++	++++	+++

Note: (+++++ +) - very good (++++)- moderately good (+++)- good (-)- did not grow

E for controlling *Bacillus amyloliquens* HAPH2 as well as in the food environment stored in CaCO_3 of different concentrations. we planted coli bacteria. We observed the colonization of bacteria for several days. As a result of observing our studies, we found that in the 1% CaCO_3 nutrient environment, the *Bacillus amyloliquefaciens* HAPH2 strain and *E.coli* bacteria have seen growth. However, as the concentration of CaCO_3 increases, the colony of bacteria is obtained especially for control *E. coli* has seen reduced bacterial colonies. Especially in the food environment where 7.5% and 10% of CaCO_3 store *E. coli* bacterium did not grow at all. We have seen that *Bacillus amyloliquefaciens* HAPH2 grew well in the food environment (+ + +), where 7.5% and 10% of CaCO_3 stored.

In conclusion, it turns out that the *Bacillus amyloliquefaciens* HAPH2 strain can be used for agricultural crops by preparing suspensions on saline soils in calcium carbonate (CaCO_3) salts, which are considered the most harmful salinity.

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Economic sciences

DEVELOPMENT PROSPECTS OF MANAGEMENT SYSTEMS IN CONSTRUCTION COMPANIES

Aliyev A.M.

Doctor of philosophy in economics, associate professor
Azerbaijan University of Architecture and Construction,
ORCID ID: 0000-0002-5134-188X

Aliyeva M.L.

Head teacher
Azerbaijan University of Architecture and Construction,
ORCID ID: 00000002-3608-4352

Mammadov SH.N.

economics, phd student
Azerbaijan University of Architecture and Construction ,

Abstract

The construction industry plays a pivotal role in shaping the physical infrastructure of societies. To effectively navigate the complexities of this sector, construction companies have turned to advanced management systems. These systems encompass a range of tools and strategies designed to enhance project planning, execution, and overall business operations. This article delves into the development prospects of management systems for construction companies, exploring the key trends and potential future advancements that will drive efficiency and success in the industry. The construction industry stands as one of the pillars of social progress, contributing to infrastructure development and economic growth. With its inherent complexity and the need for effective coordination among various stakeholders, the adoption of advanced management systems has become imperative for construction companies. These systems not only enhance project efficiency and resource allocation but also offer a strategic edge in a highly competitive market. This article delves deeper into the development prospects of management systems in construction companies, exploring emerging trends and potential advancements that hold the promise of transforming the industry..

Keywords: Construction management systems, Building Information Modeling (BIM), Project management software, Sustainability

Current Status of Management Systems in Construction. Traditionally, construction projects were managed using manual processes that often resulted in delays, cost overruns, and communication gaps. The adoption of digital management systems has accelerated in recent years. These systems integrate a variety of technologies, such as Building Information Modeling (BIM), project management software, and data analytics, to streamline processes and improve decision-making. For example, BIM has revolutionized project planning by allowing stakeholders to collaborate on a shared digital model of the project. This improves communication, reduces errors, and allows for efficient resource allocation. Project management software improves project visibility and control by assisting with task planning, resource allocation, and progress tracking. Data analytics helps construction companies analyze historical project data to identify trends, patterns, and areas for improvement. Traditional construction practices were often marred by inefficiencies, cost overruns, and communication breakdowns. The advent of digital technologies has caused a paradigm shift in how construction projects are managed. Today's construction companies rely on a range of management systems that encompass a variety of tools and methodologies:

Building Information Modeling (BIM): BIM has revolutionized the planning, design, and construction phases of projects. It creates a digital twin of the physical project, allowing stakeholders to collaborate and make informed decisions throughout the project lifecycle. BIM increases accuracy, reduces conflicts, and improves communication between architects, engineers, contractors, and clients.

Project Management Software: Project management tools facilitate efficient task planning, resource allocation, and progress tracking. These software solutions improve project visibility, allowing stakeholders to identify bottlenecks, make informed decisions, and optimize resource utilization.

Data Analytics: Leveraging historical project data, data analytics provides insight into project performance, cost estimate accuracy, and risk assessment. By identifying trends and patterns, construction companies can improve their strategies and make data-driven decisions.

Key Trends Shaping the Future

Integration of IoT and Smart Technology: The Internet of Things (IoT) is increasingly being integrated into construction sites through sensors, wearables, and equipment connectivity. This allows for real-time monitoring of equipment performance, worker safety, and project progress. Smart technology improves decision-making by providing accurate and up-to-date information.

Artificial Intelligence (AI) and Machine Learning: AI-powered systems can analyze vast amounts of project data to predict potential problems, optimize resource allocation, and recommend improvements. Machine learning algorithms learn from past project data, providing better risk assessment and more accurate cost estimation.

Cloud-Based Collaboration: Cloud technology facilitates seamless collaboration among project stakeholders regardless of their physical location. It ensures everyone is working with the latest information, reducing the risk of miscommunication and errors.

Sustainability and Green Practices: Construction management systems are evolving to meet sustainability concerns. This includes tools to assess the environmental impact of materials, monitor energy use, and optimize resource consumption.

Robotics and Automation: Robotic technologies are used for tasks such as bricklaying, concreting, and site surveying. As these technologies advance, they have the potential to increase efficiency, reduce labor costs, and improve safety on construction sites.

Integration of IoT and Smart Technology: The integration of Internet of Things (IoT) devices and smart technology is poised to revolutionize construction sites. Wearable devices equipped with sensors can monitor worker health and safety, while equipment sensors provide real-time data on performance and maintenance needs. This data-driven approach enables predictive maintenance, reduces downtime, and increases worker safety.

Artificial Intelligence (AI) and Machine Learning: AI algorithms process vast amounts of data to predict project risks, optimize resource allocation, and even suggest design improvements. Machine learning models trained on historical data can increase cost estimate accuracy and predict potential delays.

Cloud-Based Collaboration: Cloud technology enables real-time information sharing regardless of geographic locations, encouraging seamless collaboration among stakeholders. This improves communication, reduces the risk of miscommunication, and supports efficient decision-making.

Sustainability and Green Practices: The construction industry is undergoing a transformation toward sustainability. Management systems include tools that assess the environmental impact of materials, track energy consumption, and facilitate the use of environmentally friendly practices. This shift aligns with global efforts to reduce carbon footprints and promote sustainable development.

Robotics and Automation: Robotics is making inroads into the construction industry by automating tasks that were once labor-intensive and time-consuming. From automated bricklaying to 3D-printed structures, robotic technologies promise to increase efficiency, reduce labor costs, and improve safety on construction sites.

Challenges and Thoughts

While the future of management systems in construction looks promising, there are challenges that need to be addressed. These include:

Cost of Implementation: Upgrading to advanced management systems requires a significant initial investment in technology, training, and infrastructure.

Data Security and Privacy: With increasing reliance on digital systems, protecting sensitive project data from cyber threats becomes a critical concern.

Integration Complexities: Integrating various technologies into a seamless system can be complex and requires careful planning to ensure compatibility and interoperability.

While the future of management systems in construction is promising, there are challenges that need to be carefully considered:

Cost of Implementation: Adopting advanced management systems involves significant upfront costs for technology acquisition, training, and infrastructure upgrades. Companies need to weigh these costs against the potential long-term benefits.

Data Security and Privacy: As digital systems become more prevalent, ensuring the security and privacy of sensitive project data is crucial. Strong cybersecurity measures are necessary to protect against cyber threats and data breaches.

Integration Complexities: Integrating different technologies can be complex and requires careful planning. Ensuring compatibility and interoperability between different systems is essential to avoid inefficiencies and communication gaps.

Conclusion

As construction companies continue to face complex projects and dynamic market demands, developing robust management systems is essential. The integration of technology trends such as IoT, AI, cloud computing, and sustainable practices will pave the way for more efficient, cost-effective, and sustainable construction processes. By embracing these developments, companies can position themselves at the forefront of the industry, ready to overcome challenges and capitalize on new opportunities. The prospects for the evolution of management systems in construction companies are intrinsically tied to the industry's progress. Embracing the emerging trends of IoT, AI, cloud collaboration, sustainability, and automation positions construction companies to thrive in an evolving environment. By harnessing the power of these technologies, construction companies can increase project efficiency, reduce costs, improve risk management, and contribute to sustainable development. As the industry continues to evolve, companies that proactively embrace and adapt to these trends will be well-equipped to excel in the dynamic world of construction.

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INTERNATIONAL EXPERIENCE OF USING RENEWABLE ENERGY SOURCES

Aliyeva Ruhangiz TofigAssociate Professor, Doctor of Philosophy in Economics
Azerbaijan Architectural and Construction University,
ORCID ID 0000-0002-5214-006X**Aliyev Farid Zaur**Siegen university Germany
Azerbaijan State Economic University (UNEC),
International School of Economics
ORCID ID 0009-0003-1190-6991**Abstract**

Alternative energy sources such as solar, hydro, wind, geothermal and bioenergy have become especially relevant in recent decades. This is due to several factors.

First, traditional energy sources such as oil, coal and gas are scarce and will eventually run out. Second, the use of these traditional energy resources causes serious environmental pollution and is one of the important causes of global warming. Alternative energy sources, on the other hand, are more environmentally friendly and renewable. Third, the development of technology has made the use of alternative energy sources more economically attractive. The cost of generating energy from solar and wind sources has increased significantly in recent years and this trend is expected to continue. In addition, the development of batteries and energy storage technologies makes it possible to use alternative energy sources more efficiently and to eliminate the problem of their volatility.

Economically, alternative energy sources are very useful. It is true that currently their production and construction costs are high. But with proper planning, it is possible to use them effectively.

Keywords: alternative energy, resources, renewable energy, natural energy, climate, environment, green energy.

One of the main concerns in the world is the economical and efficient useage of natural resources. One of the most important tasks is the application of non-conventional energy sources in all areas of the economy, using world achievements in the field of renewable energy sources. [2, p. 170].

One interesting example is the US experience. As part of the US energy policy, it wants to focus on the use of renewable energy sources and technology both domestically and abroad. If the government finds a way to solve this problem, it will help American businesses that sell renewable energy technology. This will encourage more people in the US and other countries to use renewable energy. This will help to increase the revenues and make the world ecologically safer when it comes to energy.

Research shows that scientists working for the US government have worked really hard over the past 15 years to make renewable energy sources better, cheaper and more reliable. Currently, in some areas of the United States, electricity from wind turbines is close to being as cheap as electricity from conventional fuels. The US became the best player in solar energy because they invest a lot of money on it. People are trying to use biomass to make electricity and fuel for cars. In the future, we will focus on creating ways to use hydrogen as an energy source by creating new technologies.

In the future, we can use renewable energy sources to meet 20 % of the world's commercial energy. Only 2% of the energy we currently use comes from renewable sources. But in the future it may increase to 50%. These assessments are not intended to predict future development, but rather show what we can achieve with clean energy that will not run out [5].

Spent an estimated \$20.3 billion on renewable energy products. This means that we are talking about a small fraction of the money spent on energy worldwide, 17%. It is expected that people will spend 80.5 billion dollars on "clean" energy in the next ten years. Sharp, a Japanese company called Corporation, controls the solar panel manufacturing market. And the American company called General Electric is the best in developing equipment for wind farms.

In some developed countries, the government has plans to create more forms of energy that are good for the environment. These programs help solve scientific, technical, energy, environmental, social

and educational problems. We can achieve our goals by addressing issues related to government policy, tax laws, and funding for science and technology programs. We can also create an education system, experiment and promote technology. We can create jobs and influence public opinion. We really need to focus on the European plan for renewable energy.

Issues of pollution and natural energy use have made it imperative to do more research on alternative energy sources. Studies show that in 50 years, half of the world's energy will come from renewable sources. Natural renewable energy can help us reduce pollution and save resources [5, p.50].

Countries around the world insist on having more renewable energy. They plan to double this existing capacity. Here are the things we need to do to implement the program:

1. The device that can convert sunlight into electricity should be used more and more.
2. Large wind turbines must be built
3. Power plants using biomass materials together should be created.
4. Geothermal facilities should be built in places with natural heat
5. Platforms that produce energy from wind and waves should be built in the ocean

Alternative sources such as wind or solar energy are connected to the main electricity system. By doing these things we can see good things happen, more jobs are created and the need to buy fuel from other places is reduced, which saves money.

In some countries, solar power plants that use sunlight are being built. They are building a solar power plant on a large lake in California called the Salton Sea. It will have a capacity of 5 megawatts, and then they want to increase it to 600 megawatts. In this case, 15% of the entire lake area will be used.

The solar power plant constructed near the Dead Sea is capable of producing 5 million watts of electricity and has a solar area covering an area of 0.25 square kilometers. Several power plants, each capable of generating 50 million watts of electricity, will be built in the Dead Sea, a large area of 500 square kilometers.

In Sweden and Finland, solar heating systems are being created that use heat pumps and large tanks to save the sun's heat in the summer and use it for heating in the winter. This can cover most of the heat they need.

Other countries such as Denmark, England, USA, Australia, New Zealand, France and Germany use wind energy to generate energy from renewable sources. More than 1 million wind turbines are operating, each capable of generating between 5 and 200 kilowatts of power.

Denmark generates more electricity from wind farms than any other country in the world, but only 4%.

In Russia, a group called " Vitroen " develops small wind turbines that can produce about 2-5 kilowatts of energy. They are focusing on finding ways to harness wind energy. These equipments are used in remote areas where it is difficult to get power and the weather is not good[5].

To continue improving energy in the future, the following should be done:

1. Saving by using non-renewable energy sources wisely.
2. To use energy wisely to avoid waste during generation, transformation, transmission and use of energy.
3. Finding new ways to get energy using hydrogen.

Aims to achieve three main goals, one of which is to minimize risks. [3, p. 378].

– Climate protection means reducing the impact of human activities on the environment and taking action to prevent or slow down climate change.

– Sustainable development means making decisions that help protect the environment while meeting the needs of people living now and in the future.

The result. To make economic decisions on a large scale, we should pay attention to several important tools [1,4, p.352]:

– Indirect taxes on pollution mean that companies have to pay extra depending on how much pollution they produce, especially those that emit a lot of CO₂. This is done by adding taxes on the energy they use.

– Find new ways of calculating taxes that promote sustainable economic activity.

– We make the best use of resources by paying attention to how people use energy at home.

– Environmental concerns affecting many countries must be taken into account when international trade and cooperation decisions are made.

We need a system of "green certificates" to promote the use of alternative energy sources. This system should be implemented step by step, adapt and help small and medium businesses.

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ANALYSIS OF RISKS IN THE EVALUATION OF INVESTMENT PROJECTS

Mammadov Mahabbat Ashir*Doctor of Economics, Professor, Azerbaijan University of Architecture and Construction*

ORCID: 0000-0002-5327-2507

Ganiyev Khanlar Ilgar*Doctor of Philosophy in Economics, Azerbaijan University of Architecture and Construction Senior**Lecturer, Department of Business Economics and Management*

ORCID ID: 0000-0003-2435-0833

Abstract

This article delves into the fundamental aspects of risk management within the framework of evaluating investment projects. It emphasizes the integral role of risk management in achieving strategic goals, ensuring profitability, and maintaining operational efficiency amidst uncertainty.

Key Points Covered:

- 1. Classification of Risks:**
 - **Time-based Risks:** Retrospective, current, and prospective.
 - **External vs. Internal Risks:** Political, economic, demographic, and social factors externally; management, production, and marketing-related internally.
 - **Nature of Outcomes:** Statistical (damage-centric) vs. dynamic (losses or profits).
- 2. Understanding Investment Risks:**
 - Specific to investment projects, risks include inflation, devaluation, market volatility, and liquidity challenges.
 - Risks affect critical project metrics like net present value (NPV), internal rate of return (IRR), and payback period (PB).
- 3. Risk Analysis Techniques:**
 - **Qualitative:** Expert opinions, analogous project comparisons, and risk mapping.
 - **Quantitative:** Discount rate adjustments, sensitivity analysis, and scenario modeling.
- 4. General vs. Specific Risks:**
 - **General Risks:** Impact all investors, such as socio-political instability, inflation, and regulatory changes.
 - **Specific Risks:** Unique to projects, including field, credit, business, and operational risks.
- 5. Uncertainty and Risk Management:**
 - Distinction between risk (measurable probabilities) and uncertainty (lack of predictive information).
 - Emphasizes the necessity of identifying, classifying, and addressing risks for effective investment decisions.
- 6. Mitigation Strategies:**
 - Incorporation of reserve funds, diversification, strategic decision-making, and adherence to global financial standards.

This comprehensive analysis highlights the multifaceted nature of risks in investment projects and presents methodologies to assess and mitigate them effectively. It bridges theoretical underpinnings with practical approaches to risk management, aiding investors and enterprises in decision-making under uncertainty.

Keywords: Risk management, investment projects, risk classification, retrospective risks, current risks, prospective risks, external risks, internal risks, statistical risks, dynamic risks.

Introduction

Risk management activity in enterprises and organizations is an integral part of the management aimed at achieving their strategic goals in production and non-production activities, performing functions defined by law, maintaining the balance of interests and increasing profits in the activities carried out. It is to ensure the efficient operation of the enterprise, organization, and companies in the conditions of uncertainty in the establishment of the risk management system. For the purpose of risk

management and reduction of its impact, it is appropriate to classify risks according to factors characterizing time, place and volume of risks, and their results. Risks related to the time factor include retrospective, current and prospective risks. It should be noted that retrospective risk analysis allows accurate forecasting of existing and future risks and reduction of these risks. The risks that may arise from the factors-factorial point of view are political risks, and they arise as a result of a change in the political environment that affects the activities of enterprises, organizations, entrepreneurs, that is, closing borders, bans on the import and export of products, and conducting a military operation. Economic risks are risks arising as a result of deficiencies in the enterprise's activity or in the country's economy in general. The most common type of risk in this direction is various changes in market conditions,

Unbalanced liquidity (non-payment of payment obligations on time) is a risk associated with changes in economic management. External and internal risks - external risks are risks that are not entirely related to the activities of enterprises and companies or their partners, and are influenced by political, economic, demographic, social, geographical factors. Internal risks are the risks that arise during the activities of enterprises and companies with their partners. These risks include the business activities of the heads of enterprises and organizations, effective marketing strategy, the selection of effective policies and tactics in the management of the activity process, production potential, the level of provision of innovative techniques and technology, qualified specialists. security measures with. Due to the nature of the result, the risks are statistical and dynamic. Statistical risks are almost always characterized by damage to the activity of the enterprise; the causes of these risks can be natural disasters, wars, various accidents and criminal events, and non-business activities of the enterprise. Dynamic risks can bring both losses and additional profits as a result of the enterprise's activity. In modern economic studies, a broad and fundamental interpretation of the elements and important signs characterizing the objective and subjective signs of risks has been given. Risks manifest themselves in a complex form, which in many cases does not correspond to the real basis and in some cases is the opposite. Let's consider a number of approaches in order to fully clarify the "risk" category in general. Thus, "risk" was adopted according to the words *Ridsikon*, of Greek origin, which means a steep rock. The meaning of the word risk in several languages of the world is given below:

- *Risico* in Italian means danger, fear, maneuvering between rocks;
- *Risdoo* is French for fear, literally risking to cross a steep cliff;
- Risk is indicated in the explanatory dictionary of economic terms of the Azerbaijani language as a synonym for the words danger place, possible danger, and scary business;
- Risk is mentioned in the explanatory dictionary of the English language as a situation that may cause danger, the possibility of an unexpected unpleasant event;
- In the explanatory dictionary of the Russian language, risk means the possibility of danger or a step taken to fail in order to achieve an effective result.

At the beginning of the 20th century, the economic analysis of the concept of "Risk" was given in the literature prepared by US economic researchers. Thus, for the first time, this concept was brought to the economic literature by the US researcher Frank Knight, who wrote in 1921 "Risk, uncertainty and returns". In his scientific work, risk was interpreted as an economic category. According to him, risk is a measurable uncertainty. If it is possible to determine the quantitative or qualitative indicators of the future loss or profit of the enterprise as a result of the currently implemented activity, then this uncertainty can be explained as a risk that has occurred, that is, it occurs because of this. it is possible to insure against the risk.

It should be noted that in the identification of risks, their classification and evaluation, taking into account the factors mentioned above, the analysis of risks by applying modern economic mathematical models and the correct definition of the essence of each type of risk were important in forming the optimal mechanism of risk monitoring. Thus, the investment risk that appears in the efficient organization and management of the enterprise's activities and is necessary to manage is the possibility of financial losses occurring in the process of investment activities of various subjects. In investment activity, there are many risks that are classified according to different characteristics. Risks are divided into technical-technological, economic, political, social, ecological, legal-legal types according to the field of occurrence. Investment risks differ according to the following forms:

- inflation risk;
- risk of devaluation;
- market risk;
- operational investment risk;

- functional investment risk;
- selective investment risk;
- credit investment risk;
- old risks;
- risk due to lost profit;
- liquidity risk;
- the possibility of loss due to failure to carry out any action.

If we take into account that the main investment is related to the creation and production of a new product, then it is possible to determine and direct the investment cycle related to these activities.

Investment risk - the possibility of unexpected or additional costs arising in connection with the implementation of the project, the failure to receive the specified profit due to the funds invested in the production and services of new products. The presence of constant risks in investment activities hinders its development. Therefore, being wary of risks leads to the implementation of many ideas. At the same time, the attractiveness of investment activity allows to earn profit and additional income, which is in the constant interest of subjects. It should also be taken into account that these risks are related to the future economic and financial situation of the subjects of the project and are characterized by uncertainty.

Uncertainty is characterized by the incompleteness and inaccuracy of information related to the conditions of the life of this project. It should be noted that the uncertainty is a temporary situation, it can be identified and eliminated by progressive economic-mathematical methods. At the same time, it should be taken into account that uncertainty can create different scenarios as a result of project implementation and development. The limits of uncertainty may or may not be fully or partially known. For example, the demand for any existing product from the market for a specific project is known, but at the same time, the attitude of the legislation to the production of this product is important. So, the uncertainty is also related to the fact that the cost of the product is in a different interval. In this situation, risk assessment is very important for any investor, because as a result, he can make a decision about whether the project is acceptable or not for him, so that the risks are ultimately financial, and this is from the source or partial acquisition. or may cause it to arise. Ultimately, risks are reflected in the project's performance indicators: net present value (NPV), internal rate of return (IRR) and payback period (PB). One of the key sections of any project is risk assessment and management. Risk management includes the analysis and assessment of risks in the first stage, the preparation of complex measures aimed at avoiding risks and minimizing losses in the second stage, and the implementation of all measures in the stage of life and operation of the project in the third stage.

Analysis and assessment of risks is one of the stages of risk management. Simple and complex approaches are used in risk analysis.

The technology of analysis and assessment of investment risks is generally carried out in the following form:

- collection and systematization of information for risk analysis;
- identification of risks;
- development of the project risk map;
- qualitative analysis of risks;
- collection of additional information;
- quantitative analysis and risk assessment.

Identification of risks and their preparation are important factors in data collection. It should be noted that there are different approaches to the classification of risks in the scientific-practical teaching-methodical literature. But in their general form, they can be classified into three main groups:

I. Project life cycle stage (initiation, project planning and development, project implementation, completion and operation);

II. Actor's risk (management risk, marketing risk, risk of deviation from the project implementation schedule; risk of full financing, operational risk);

III. Scope of risk exposure (internal-enterprise level and external)

The most likely risk in the initiation, planning and development phase of the project are the following examples in the planning and marketing plan:

- the information used in the development of the project is not complete, perfect and reliable;
- subjectivity in project development;
- the correct assessment of the market in the process of increasing the value of the project compared to the reports made due to the effect of inflation;

-wrong marketing strategy.

Risks of a managerial nature may arise during the initiation, planning and development stages of the project. Thus, the project management (director, entrepreneur) or other persons (investor, business partner, society) may arise as a result of proposing the development of the project in the conditions of incorrect reports required for obtaining economic justification. This may be due to the lack of a smart investment policy, the management not having the necessary level of knowledge, or the adventurous approach of individuals to business. The following technical risks can be identified in the first phase of the project:

- failure to obtain negative and unsatisfying results of scientific research and experimental design works;

- low-quality processing of the project (increasing the price, mistakes made in determining the unjustified plan-schedule cost of works.

Organizational, marketing, technological and manufacturing risks (deviation of actual indicators from project parameters) are distinguished at the stage of project implementation.

Organizational risks:

- non-fulfillment of contracts concluded with partners in the project;

- poor project manager, he does not have perfect knowledge and information about the project; - lack of confidence in achieving the goal; - making changes in the strategy of the enterprise and its organization;

-reduction of funding or deviations in the schedule for this process.

Marketing Risks:

- road mistakes in choosing the market segment;

-improper selection of the position

- Reasons for concessions in pricing and prices

-weak and inefficient performance.

Technical risks:

- detection and assessment of problems, project scope, cost, scope of work and fulfillment of environmental protection requirements;

- idle stoppages and their breakdowns in the operation of equipment at work.

Manufacturing risks:

- stoppages in the execution of production plans due to various reasons; - low quality of the equipment;

- lack of qualified specialists (personnel);

-allowing excess expenses on all elements (raw materials, electricity, wages);

- increase in non -production costs;

- occurrence of unforeseen expenses;

- staff irresponsibility.

It should be noted that the following may be attributed to possible risks at the stage of project completion:

- non-fulfilment of contracts concluded with project partners;

- the results of the project are not in accordance with the requirements of the legislation.

All the risks listed above are internal risks. They arise as a result of the activities of managers within the enterprise and their mistakes and low quality.

All internal factors are controllable, unlike external factors. It should also be taken into account that the analysis of project risks is of special importance as a basis for the preparation of action plans that allow determining the reasons for the non-occurrence of internal risks. Risks related to the external environment include risks related to nature, climate conditions, politics, economy, science and technology, society and the market. It is impossible to eliminate the non-occurrence of risks related to the external environment, but it is possible to predict and prepare for these risks based on experience, research and studies conducted at different times, to deviate to a certain extent and minimize the loss.

The most widespread risks related to the external environment include:

- changing the legislation regulating entrepreneurial activities (tax, antimonopoly, technical, customs, banking);

- emergence of new competitors in the enterprise or products;

- the influence of public organizations;

- earthquake, fire, accident.

Simple (qualitative analysis) and more complex (quantitative analysis) approaches are used to analyze the mentioned risks. At the same time, a number of experts distinguish the qualitative-quantitative method and consider it appropriate to use this method in risk analysis.

Quantitative analysis reveals the risks related to all stages of the project and all its work in general, and at the same time determines the stages of possible risks that affect the final and intermediate indicators of the project.

Quality analysis is carried out at all stages of the project development process, as well as at any moment of project implementation, which is the advantage of this method. Quantitative analysis is sufficient for complex and low-cost investment projects. The lack of this method can be attributed to the fact that it is not possible to measure risks.

The essence of the quantitative analysis consists in making reports that affect the determination of the probability of occurrence of risks and the results of the project. Project organizations and departments use different methods of quality analysis in practice. That is, the most likely method, the expert method and the analogical method are widespread.

Expert method - assessment of independent experts on each form (factor) of risks is processed (processed).

Probability method - collection, processing (analysis) of statistical indicators related to the nature of the project in the past periods (years) and determination of the parameters affecting the elements of the project, risk events.

Analogous method - for the purpose of identifying and clarifying risks for the preparation and consideration of new projects, similar projects should be analyzed and the risks that appear during the implementation of these projects should be taken into account.

The simplest and most visual method of risk analysis and assessment is development of a risk map of the investment project. The basis of this is probability and expert methods, that is, these methods are widely used in the preparation of risk maps.

At the initial stage of this method, a list of risks and hazards is drawn up. Then, an expert evaluation is conducted on two parameters, i.e., the probability of the occurrence of a specific risk and the consequences of the occurrence of these risks for the project. The emergence of these risks leads to direct losses and non-obtainment of potential profits, that is, direct damages.

These parameters can be conventionally carried out on a three, four or five-dimensional scale (scale). For example, the evaluation on a three-dimensional (scale) scale can be in the following form, i.e., high, medium, low, high importance, important and insignificant for the probability of the occurrence of risks. The diagram below shows the map of construction site risks

Map of the risks of the construction investment project. Table

Probability of risks	high	decrease in the price of the manufactured product		The probability that the intended products will not be available
	medium	supply of building materials	Non-compliance, stoppages during construction	
	down	lack of specialists		
		highly important	important	less important
Consequences of creating risks				

Classification of the probability of occurrence of risks.

The example of investment risks generation is given above, but the estimated risks for investment projects by fields should be indicated in the corresponding squares of this matrix. This map gives the investor at least some information to make decisions about the project

Leading specialists in the field of **project management** consider it appropriate to consider a reserve fund for the project in order to ensure the effective implementation of the project during its implementation. ["Discounting" muhasib.az. January 25, 2023].

These include the following directions:

- the duration of work by 20% for domestic non-contractors and 10% for foreign non-contractors;
- 20% reduction of the production volume during the operation of the project;

- 20% increase in production costs and 20% loan payments during the operational phase of the project ;

Experience shows that the value of these projects is significantly reduced in the stages of preparation of large and complex projects. This happens mainly in projects financed from the state budget.

During the project development stage, irresponsible participants have one goal - to attract investors to the project and provide financing, later unplanned works arise, and as a result, adjustments are made in order to increase the value of the project.

As a result of the qualitative analysis of risks, report documents are prepared, which distinguish the risks to be analyzed, the generalized assessment of risks, the systematization of risks, and the quantitative analysis.

Quantitative method of analysis. Quantitative assessment of risks is carried out using the following five methods:

- adjustment of discount rates method;
- determination of the maximum resolution (point) of the project's continuation;
- analysis of the sensitivity of the project;
- analysis of the development scenario of the project;
- imitation modeling.

The first three methods are used due to their simplicity.

The method of adjustment of discount rates

This method is widely used in project management in Azerbaijan and foreign countries. The main essence of this method is the calculation of the main indicators of the project (net discounted income, maturity and internal rate of profit) taking into account the adjustment coefficient of discounting. Considering the risks, the method of adjustment of discount rates is based on simple reports, and at the same time, its essence and accessibility are more easily possible. This method is widely applied in Azerbaijan and foreign countries. The essence of this method consists in the adjustment and justification of some basic accounting rate (for example, the average cost of capital for the company) that is considered low-risk, and the process of adding a risk premium calculated by an expert. Efficiency criteria (gradations) of investment projects are calculated according to established norms. At the next stage, the efficiency criteria of investment projects corresponding to the newly established norm are calculated. It should be noted that the higher the risks associated with the implementation of the project, the greater the reward. For example, if any company is implementing a new project, the company can set a 10% or reasonable risk premium according to the norms. So, if the marginal capital rate is 9%, according to the relevant norms, the accounting rate will be 19%.

The advantages of this method that distinguish it from other methods can be systemized as follows:

- simplicity of reports;
- to be more accessible and clear;
- no need to use special software.

However, in addition to the mentioned, this method has a number of shortcomings and shortcomings.

So:

- Here, the risk increase during the implementation of innovation activity is considered. This is not correct. Because experience shows that there are risks in the initial stages of the implementation of many projects, but the reduction of risks is observed in the stages of project implementation and mainly in the last stages.

- These methods do not include information about the future (sources) of payments related to risks, they do not provide their evaluation, but they allow the price in the current period.

Despite these, the easier and more accessible application of this method, as mentioned, creates more favorable conditions for its application.

It should be noted that the main essence of the discount rate method for scheduling project costs consists in the adjustment of a number of accounting rates (for example, the marginal or average cost of capital intended for the company) that are considered risk-free.

These adjustments are made taking into account the risk premium calculated by the expert. After this operation, the process of calculating the efficiency criteria and factors of the investment projects to be implemented on the basis of the new established norm is performed. It should also be noted that the premium is determined according to the level of risks determined as a result of the report. That is, the

higher the risk, the greater the reward. For example, when a company executes a project, it can estimate a risk premium of 10% of its proposal, while at the same time, if the marginal capital rate is 9%, then the accounting rate is 19%.

At the same time, it consists of regulating the cash flow of payments by applying special reducing factors, i.e. reliability coefficients, at each stage of the reliably implemented project.

Discount - as a word of English origin, discount is interpreted as the difference between the current price of securities and the nominal (shown on the paper) price as an economic essence corresponding to the meaning of discounting the price. It should be noted that the discounting method is widely used in evaluating the efficiency of the planned investment projects, and this method has an important role in determining the economic efficiency of the projects. With the discounting method, the exchange rate differences between the cash flow of expenses during the implementation of the projects and the money that will be received from the implementation of the project in the following years bring to the "common denominator". According to currently available methods, the discount interest rate (is the interest rate applied for the purpose of adapting and converting the unit of prospective income to the current value.

$$NPV = \sum_{t=0}^N \frac{CF_t}{(1+i)^t} = -IC + \sum_{t=1}^N \frac{CF_t}{(1+i)^t}$$

where i is the discount rate. The discount is variable depending on a number of factors. i.e. $i=f(i_1, \dots, i_n)$

where $(t_1, \dots, t_n)$ are the factors affecting the future cash flow determined separately for each investment project:

t_1 - the value of an alternative investment for any given period - is the bank interest rate on deposits, the refinancing rate, the average profitability of the existing business, and so on.

t_2 is the evaluation of the level of inflation in a selected period, that is, the evaluation of the value of the risk of obsolescence of funds for this period.

It should be noted that the process of discounting the amounts invested in many cases in the financial field is carried out in the selection and evaluation of new projects in investing, purchasing shares. It should be considered that the discounting of these amounts is carried out in accordance with the requirements of international standards of financial statements:

The discount rate is used in calculating the present value of future NPV cash flows ["Discounting" muhasib.az. 25 January 2023].

so that

- income from contracts with customers. IFRS 15;
- leases IFRS 16;
- decline in asset prices IAS36;
- created reserve funds, contingent liabilities and contingent assets IAS37
- financial instruments, recognition and measurement. IAS39 etc.

For example, in accordance with the IFRS 16 Leases standard, the lessee must measure the lease liability from the commencement date of the lease at the discounted value of the outstanding lease payments on that date.

In order to clarify the essence of discounting, which is generally intended or used, and the process of its calculation, this operation should be explained with the following example. For example, consider the calculation of compound interest. If the enterprise opened a deposit account in any bank and placed a deposit of 2000 AZN for a period of 2 years, and the annual interest rate on the deposit is 10%, after ten years, the amount deposited in the bank will be 2200 AZN. That is, the main amount is 2000 AZN plus an interest supplement of 200 AZN ($2000 \times 10\%$), after one year, the amount from the report will be 2200 AZN, and the enterprise can withdraw this amount.

So: $2000 (1+10\%)$ or $2000 (1 \times 10) = 2200$ AZN. After two years, 2000 AZN is 2410 AZN, i.e. 2000 AZN + first year's interest 200 AZN, second year's interest 210 = $2200 \times 10\%$ annual growth of the enterprise's savings account in the bank should be calculated as mentioned above.

Thus, as the number of years the company deposits its deposit in the bank increases, it is necessary to factor the amount of the deposit to determine the amount at the end of one, two, three... years.

where = R interest rate (10% or 0.10);

example to determine the essence of the discounting process.

If enterprise I pays 2,000 AZN to enterprise II today, and enterprise II puts this amount into the deposit account of any bank at an annual rate of 10%, after two years, it can withdraw 2,410 AZN from the deposit account in the bank. Thus, the current 2,000 AZN will be equal to 2,410 AZN after two years.

The issue is discounting.

Enterprise I must pay Enterprise II 2,410 AZN after two years. In order to calculate the value of this debt amount today, doing the opposite, the debt amount is 2410 AZN $(1+0.10)^2 = 2000$ AZN.

This operation is called discounting. That is, as can be seen from this process, discounting is the process of calculating the value of the amount to be received to individuals or legal entities after several years or to the present day. From the methods mentioned above, the method of determining the sustainability level of the project is mainly used to calculate the break-even point of new production and to determine the reserve of the sustainability of the project. The breakeven point is calculated by the following formula:

$$IN = X_d / (Q \times X_{\text{deg}})$$

where X_d - fixed costs (man); Q - unit product price (man); X_{cost} - variable costs, the volume of these costs changes in costs as the volume of the produced product changes.

The project is considered relatively sustainable if the production volume and product realization are higher than 25% of the break-even point.

At the same time, it should be noted that the difference between the normal indicators of the project and the break-even point is the margin of safety. The smaller this difference (safe margin), the higher the risks in the loss zone.

Project sensitivity analysis

The essence of this method is to recalculate the main indicators when any of the important initial indicators of the project, i.e. investment, physical sales volume, product cost and sales volume indicators change. These initial indicators are considered as the most reliable indicators in the project, but experience shows that the initial indicators may change in one direction or another during the implementation of the project. The main task of this method is to calculate the net profit, determine the profitability of the investment, the physical volume of sales, the price and all the costs of production and the sales volume of the product, if the investment volume varies by 10%. Based on this analysis, the expert systematizes the mentioned changes according to their significance for the project and distinguishes those with higher risk. The project development scenario analysis method calculates the main indicators of the project and, along with them, a number of initial indicators of the project, for example, changes in exchange rates, tariffs, changes in taxes, and so on.

In simulation modeling, various reports are implemented using special programs by changing various parameters in the project scenario.

Risk and uncertainty in making investment decisions.

Determination of risk and uncertainty in the theoretical and practical methodology of organizing and managing the activities of enterprises is one of the necessary factors, their assessment should be carried out at all stages of project implementation. According to the signs of risk generation and management, it has the following characteristics:

- Achieving the normal profit rate of the enterprise is always related to big and small risks (A. Smith)

- Uncertainty can be determined by any quantitative method, but if it cannot be measured, a mechanism for its elimination should be developed. This form of uncertainty serves to create the interests of entrepreneurs (German classical school X. von Mangaldos);

- The entrepreneur shows that he is ready to take risks in an environment of uncertainty, that is, even if there are losses due to the risk in these conditions, it is possible to generate additional income at this stage (R. Cantilon);

- Uncertainty risks in a unique form ensure the creation of profits for entrepreneurs (FXHayt);

- If the risks are not considered in the action plan of the enterprise, then it becomes a source of loss on the one hand, and profit on the other, in this case it is necessary to make decisions with low risks.

Risk can be characterized as the objective probability of an event that may occur under conditions of uncertainty. Risk is related to the uncertainty of the event or deviation from the desired outcomes, both positive and negative. So the risk:

- creates opportunities for obtaining additional income or losses;

- it is an event that has a negative impact on business results;
- it is the possibility of deviation from planned or desired results.

If the risk can be expressed in a quantitative form, for example, in the form of the probability of profit distribution, then uncertainty indicates that it is impossible to measure the probability of the occurrence and calculation of the event. The main sources of uncertainty can be attributed to the fact that people do not have enough knowledge about the world around them, about natural laws or economic laws. As the second source of uncertainty, coincidences can be pointed out, that is, events occur in practically the same conditions in almost different forms, so the result cannot be predicted from the beginning. The third source can be attributed to interaction. The difference between risks and uncertainty is that the quantitative measure of risk allows us to predict positive and negative outcomes in the future, but on the contrary, uncertainty is characterized by the lack of information about the probability of future events at the required level. It should be noted that risk and uncertainty play a very important role in entrepreneurial activity, that is, they reflect the differences between planned and actual indicators. It should be taken into account that risks related to investment decisions are considered financial risks and arise in the sphere of economic activity of the enterprise and its profit and is directly related to the formation of expenses, accompanies the financial directions and financial activities of the enterprise.

Investment decision risks are included in the group of complex risks and are divided into general and specific risks.

The difference between uncertainty and risk is that, quantitatively, risk has the possibility of favorable and unfavorable future events. However, uncertainty, on the other hand, is characterized by a lack of information about future events. So, it can be said with confidence that uncertainty and risk have a very important role in entrepreneurial activity. It should be noted that risks related to investment decisions belong to the category of financial risks, which in turn arise in the economic activity of the enterprise as a part of commercial risks, related to its income and expenses.

Risks related to investment decisions belong to the group of complex risks and are divided into general and specific risks.

General risks are dangerous for all investors, it cannot be influenced, practically it cannot be avoided, so it is necessary to study the object of investment, all sources and forms of financing. Common risks include risks of competition, inflation, currency risks related to measures related to socio-political, country, environmental, state regulations, banking crises. These risks can be affected by the crisis and changes in tax legislation. Re

Socio-political risk arises due to instability in countries, political system change, war and revolution. Regional risks are the risks of loss due to the lack of sustainable development of the economic region and the social situation. Environmental risk is caused by the deterioration of the ecological situation and losses as a result of a natural disaster.

The risk related to state regulation occurs as a result of changes in the legislative framework, administrative norms, restrictions imposed on the currency market and securities market.

Conjunctive (opportunistic) risk is related to changes in individual markets, decrease in demand for products and services.

Inflation risk refers to financial risks, it is reflected in the possibility of ensuring the real value of the capital (in the form of financial assets of the enterprise), and at the same time, it is the profit and income expected as a result of financial operations carried out in connection with the increase of inflation. This type of risk is permanent in the inflationary economy and accompanies all financial activities of the enterprise.

The risk arising in connection with the change of interest rates occurs with the change of the interest rate determined by the central bank.

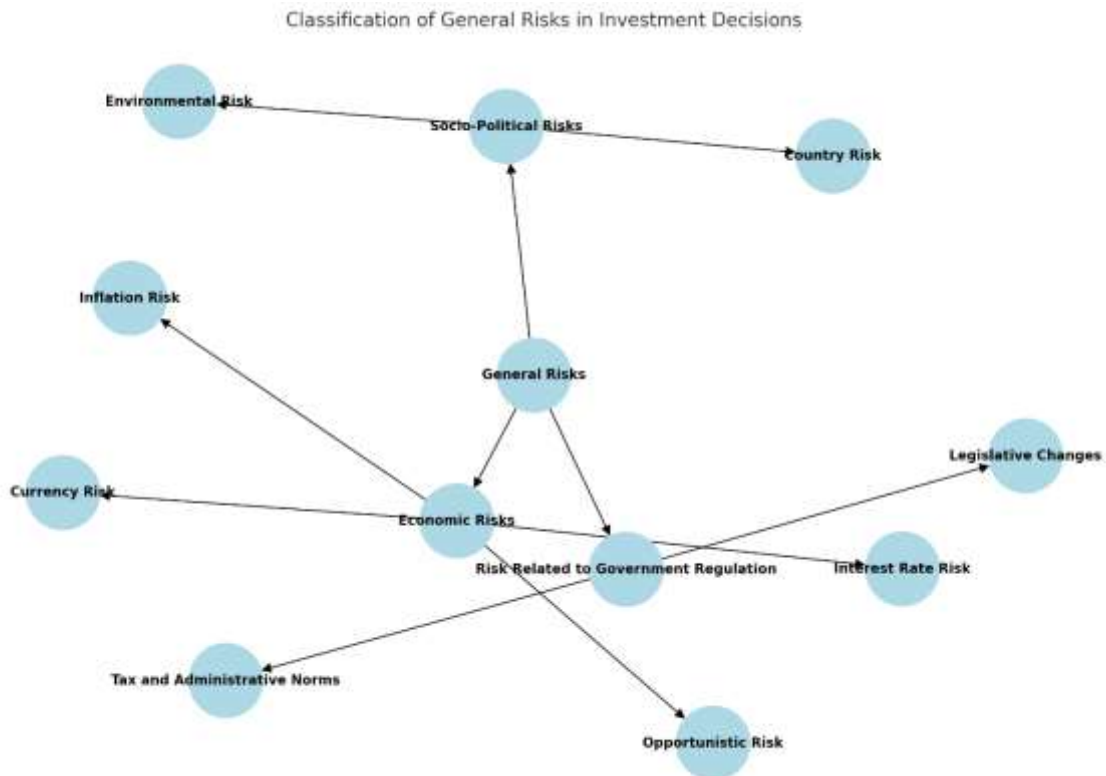
Currency risk is primarily related to changes in the exchange rate of one currency relative to another, depending on the country's political and economic situation.

Other risks arise due to the parties' irresponsible approach to their activities and failure to fulfill their duties, economic crimes, incomplete and poor performance of the obligations undertaken by the parties.

Specific risk - unsystematic, non-market, diversified risks appear as a result of incorrect investment decisions on specific subjects that depend on the intuition and professionalism of the management. Specific risks are diversified and adjustable. It should be noted that risks can be reduced and mitigated by increasing the efficiency of investment management and making professional investment decisions.

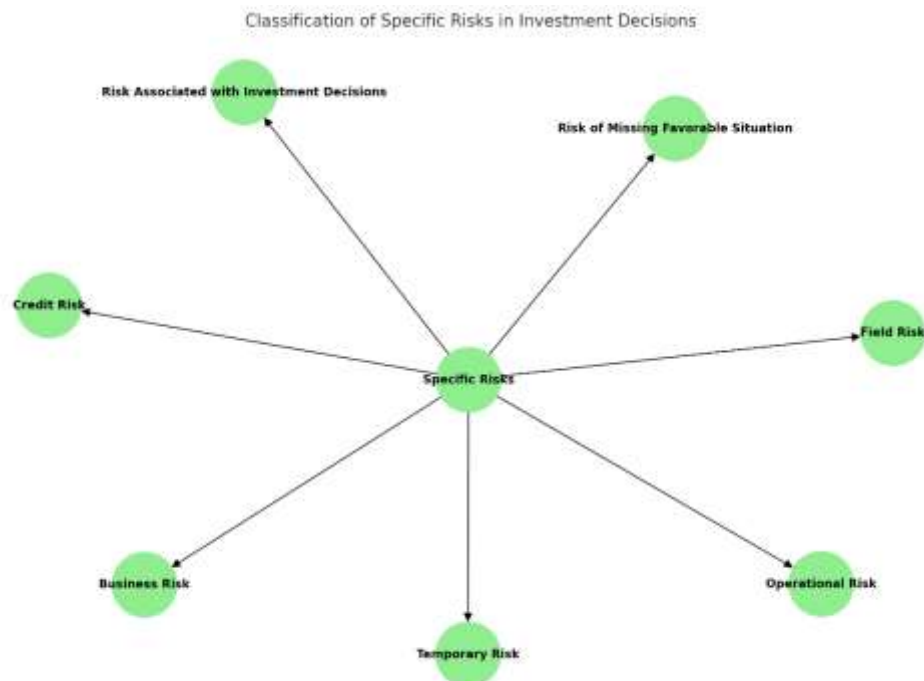
Thus, in the scheme below, common risks are presented in a systematic order.

Scheme



Specific investment risks are divided into field, credit and business risks, related to the loss of a favorable situation, liquidity, task, transaction, currency transaction, temporary, investment portfolio risks.

Scheme



Area risk is established for enterprises of one area.

Business risk is related to insufficient management activity in business management

Credit risk arises as a result of the investor's inability to repay the loan in full and is reflected in this activity. This can happen in the case of a decrease in the profitability of the investment project and a decrease in the quality of assets.

Conclusion

Effective risk management is integral to the evaluation and success of investment projects. By systematically identifying, classifying, and analyzing risks—whether external or internal, retrospective or prospective—organizations can better navigate uncertainties. Leveraging qualitative and quantitative methods such as sensitivity analysis, discount rate adjustments, and scenario modeling enhances decision-making and project viability. Ultimately, a proactive approach to risk mitigation through strategies like diversification, contingency planning, and informed management ensures sustainable financial outcomes and long-term success.

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PROSPECTS FOR THE DEVELOPMENT OF NUCLEAR ENERGY IN KAZAKHSTAN

Statsenko Olga

Associate Professor Miras University

ПЕРСПЕКТИВЫ РАЗВИТИЯ АТОМНОЙ ЭНЕРГЕТИКИ В КАЗАХСТАНЕ

Стаценко Ольга

ассоц. профессор университет Мирас

Abstract

The article outlines the issues of the need for the introduction of nuclear energy and the construction of a nuclear power plant in Kazakhstan as a reliable and affordable source of energy. The advantages of the construction and operation of nuclear power plants for the regions are outlined: the creation of new jobs, infrastructural development, social programs and opportunities for the local population.

Аннотация

В статье излагаются вопросы необходимости внедрения атомной энергетики и строительства Атомной электростанции в Казахстане как надежного и доступного источника энергии. Обозначены преимущества строительства и эксплуатации атомных станций для регионов: создание новых рабочих мест, инфраструктурное развитие, социальные программы и возможности для местного населения.

Keywords: nuclear fuel, nuclear power plants, affordable energy source, investments, economic development.

Ключевые слова: ядерное топливо, атомные электрические станции, доступный источник энергии, инвестиции, развитие экономики.

В последние десятилетия мировое сообщество столкнулось с вызовами изменения климата, что вынуждает страны пересматривать свои стратегии в области энергетики и сокращать зависимость от традиционных источников энергии, таких как уголь. В Казахстане же уголь являлся одним из основных источников энергии, и поиск альтернатив угля и более экологичное использование стали неотложными задачами.

В сложившейся ситуации переход к атомной энергетике представляется обоснованным решением. Казахстан обладает богатыми запасами урана и развитой урановой промышленностью, что делает атомную энергетику приоритетным направлением развития энергетической инфраструктуры. Атомные станции будут играть роль основных источников энергии, привлекая инвестиции и способствуя развитию экономики.

Для экономики страны в целом наличие надежного и доступного источника энергии является очень важно. Энергетика идет на шаг вперед развития экономики, потому что без энергии не будет никакой промышленности, производств, никаких инвестиций. В Республике Казахстан несколько проблем. Во-первых, в стране вообще ничего не строили 30 лет. Во-вторых, климатический фактор, когда появляется много вопросов по развитию энергетики, в какую сторону ее развивать. У нас есть обязательства по увеличению доли зеленой энергетики, достижению углеродной нейтральности. В нашей стране в первую очередь это были электростанции, работающие на угле. Гидроэнергетика - ресурсов практически нет. Переход на газ - тоже нереальный, потому что таких объемов газа нет. В то же время у нас хорошо развита урановая промышленность, начато производство топлива, то есть стратегия развития урановой промышленности однозначно приводит к замещению выбывающих угольных мощностей атомной генерацией [1].

Если атомные блоки станут основой всей энергетики, это повлечет за собой привлечение инвестиций, дальнейшее развитие экономики.

Одним словом, энергия - это катализатор инвестиций, без нее невозможно обеспечить работу промышленности и стимулировать экономический рост. Возобновляемые источники энергии - такие как солнце и ветер - важны, но атомная энергетика предоставляет надежный

и предсказуемый источник электроэнергии, который обеспечивает базовую нагрузку в энергосистеме.

Атомная энергетика - это не только способ обеспечения стабильного источника электроэнергии, но и мощный катализатор развития других отраслей экономики. Внедрение такого масштабного и наукоемкого проекта, как атомная станция, подразумевает развитие смежных отраслей, таких как строительная отрасль и наука. И так атомная станция становится двигателем развития не только собственной отрасли, но и всей экономики региона, это отрасль, которая становится драйвером развития остальных отраслей. Возникает необходимость развивать параллельно другие отрасли: строительство, науку, еще какие-то сферы. То есть атомная станция становится локомотивом развития этих отраслей.

Казахстан имеет потенциал для развития атомной энергетике и занимает первое место в мире по объему добываемого природного урана, а также свое производство компонентов ядерного топлива и доступ к услугам по изотопному обогащению урана. Появление АЭС в стране – это всегда драйвер комплексного национального развития, включая развитие высокотехнологичных отраслей промышленности [2].

Переходя от общего к частному, вложение инвестиций в регион всегда сопровождается развитием местной экономики, строительство атомных станций является именно такими бустерами развития, которые создают рабочие места, стимулируют развитие технологий и способствуют увеличению кадрового потенциала.

Вокруг станции будет и экономическое, и технологическое развитие. Это высокотехнологичное производство. В социальном плане будет обеспечен уровень всех социальных программ, начиная от медобслуживания, будут строиться и культурные, и спортивные объекты. Будет досуг для сотрудников, связь хорошая, доступ к широкополосному интернету. Плюс развитие кадрового потенциала.

В число преимуществ строительства и эксплуатации атомных станций для регионов, в которых они находятся, входит создание новых рабочих мест, инфраструктурное развитие, социальные программы и возможности для местного населения. Кроме того, атомная энергетика является высокотехнологичной отраслью, что способствует привлечению высококвалифицированных специалистов и развитию инновационных технологий, диверсификацию производства электроэнергии, которая обеспечит стабильное и надежное энергоснабжение.

Второй плюс заключается в улучшении уровня жизни в регионе, где расположена атомная станция. Опыт других стран показывает, что районы, где находятся атомные станции, имеют более высокий уровень жизни благодаря созданию новых рабочих мест и притоку квалифицированных специалистов.

Международный опыт других стран мира показывает, что в районе размещения атомной станции уровень жизни всегда выше, потому что это сложный технологический объект, который требует высококвалифицированных кадров. Люди и бизнес стекаются в этот район, создаются рабочие места. Это все является существенным толчком к развитию региона.

Казахстан исключил из списка потенциальных поставщиков технологий для АЭС США и Японию из-за того, что в мировой практике отсутствует опыт строительства и эксплуатации предложенных ими реакторов.

В свое время были рассмотрены технологии шести мировых поставщиков на основании ранее представленных предложений от американской (NuScale Power), американо-японской (GE-Hitachi), корейской (KHNP), китайской (CNNC), российской (Росатом) и французской (EDF) компаний [3].

Учитывая отсутствие в мировой практике опыта строительства и эксплуатации реакторов малой мощности, предложенных компаниями NuScale Power и GE-Hitachi, данная технология рассматривается как перспективное направление последующего развития атомной энергетике.

Стройка может занять до 10 лет, стоимость одного энергоблока в среднем составляет 5 млрд долларов. В прогнозном энергобалансе страны до 2035 года в качестве одного из вариантов рассматривается ввод в эксплуатацию АЭС суммарной мощностью 2,4 ГВт [4].

Понятно, что успешное внедрение атомной энергетике требует не только инфраструктуры и инвестиций, но и квалифицированных кадров. Важно иметь специалистов, обладающих знанием и опытом в области ядерных технологий. Казахстан уже имеет опыт в области атомной энергетике и обучает специалистов для этой отрасли. Национальный

ядерный центр и Институт ядерной физики в Казахстане, можно сказать, готовят кадры для работы на атомных станциях. Устанавливаются партнерские отношения с зарубежными университетами, чтобы обеспечить высокий уровень подготовки специалистов.

Реакторщиков-специалистов в Казахстане готовят. Например, в КазНУ открыли кафедру МИФИ, который готовил ядерных специалистов по всему СССР. Также у Казахстана установлены отношения с Томским политехническим университетом по подготовке кадров. Но у нас нет проекта, куда эти ребята пришли бы работать. Плюс у нас есть хороший опыт эксплуатации атомной станции в Мангистау - это был БН-350, первый в мире промышленный реактор на быстрых нейтронах. Это технология, которая только сейчас, в XXI веке развивается. «Казатомпром» на базе Ульбинского металлургического завода открыл завод по выпуску готового ядерного топлива для атомных электрических станций Китая, изготавливает передовое ядерное топливо, но он идет на рынок Китая, потому что у нас нет своей АЭС.

Значительный опыт Казахстана в области атомной энергетики, включая эксплуатацию ядерных реакторов и исследовательских установок, подтверждает, что местные специалисты и технологии способны обеспечивать безопасную эксплуатацию атомных станций.

По оценкам специалистов, структура новых энергетических мощностей, необходимых к вводу к 2035 году, может выглядеть следующим образом:

- свыше 5 ГВт газовой генерации;
- свыше 2 ГВт гидроэлектростанций;
- 1,5 ГВт угольной генерации;
- свыше 6 ГВт возобновляемых источников энергии;
- более 2 ГВт атомной генерации [4].

Развитие данной отрасли в Казахстане очевидно является перспективным направлением, способствующим развитию экономики, созданию новых рабочих мест и обеспечению стабильного энергоснабжения. С соблюдением высоких стандартов безопасности и использованием передовых технологий атомная энергетика может стать ключевым элементом стратегии развития Казахстана в будущем.

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Mathematical sciences

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ON OPTIMIZATION METHOD FOR WAVE EQUATION IN A PARALLELEPIPED

Guliyev Hamlet Farman
Nasibzadeh Vusala Nazim

Baku State University, Sumgait State University

Introduction

As is known, the Dirichlet and Neumann problems for hyperbolic equations are ill-posed [1]. Such problems arise in different applied problems (see [1], [2] and references therein). Therefore, study of Dirichlet and Neumann problems for hyperbolic equations is of interest both from applied point of view and in connection with theoretical issues. In the paper [2] the mixed conditions problem is studied for the wave equation in two-dimensional case. The inverse problem is considered, ill-posedness of this problem is shown, it is reduced to the sequence of one dimensional inverse problems and in the obtained problem, iterative solution methods are suggested. The inverse problem is formulated and this problem is reduced to the sequence of one-dimensional inverse problems. The uniqueness of the solution of one-dimensional inverse problems is proved. Then an optimal control problem associated to the formulated inverse problem is studied, differentiability of the functional is shown, necessary and sufficient condition of optimality is derived in the form of integral inequality.

Problem Statement

Let us consider for the wave equation boundary value problem:

$$\frac{\partial^2 u}{\partial t^2} = \frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2}, (x, y, t) \in Q = \Omega \times (0, T), \quad (1)$$

$$u|_{t=0} = f_1(x, y), u|_{t=T} = f_2(x, y), (x, y) \in \Omega, \quad (2)$$

$$u|_{x=0} = u|_{x=\ell} = 0, (y, t) \in (0, \ell) \times (0, T), \quad (3)$$

$$\frac{\partial u}{\partial y}|_{y=0} = \frac{\partial u}{\partial y}|_{y=\ell} = 0, (x, t) \in (0, \ell) \times (0, T), \quad (4)$$

where $\Omega = (0, \ell) \times (0, \ell)$, $\ell > 0$, $T > 0$ are the given numbers, $f_1(x, y)$, $f_2(x, y)$ are the given functions, moreover $f_1, f_2 \in W_2^1(\Omega)$. We formulate problem (1)-(4) as an inverse problem to the following direct well-posed problem

$$\frac{\partial^2 u}{\partial t^2} = \frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2}, (x, y, t) \in Q, \quad (5)$$

$$u|_{t=0} = f_1(x, y), \frac{\partial u}{\partial t}|_{t=0} = v(x, y), (x, y) \in \Omega, \quad (6)$$

$$u|_{x=0} = u|_{x=\ell} = 0, (y, t) \in (0, \ell) \times (0, T), \quad (7)$$

$$\frac{\partial u}{\partial y}|_{y=0} = \frac{\partial u}{\partial y}|_{y=\ell} = 0, (x, t) \in (0, \ell) \times (0, T). \quad (8)$$

In the direct problem (5)-(8) for the given functions $u(x, y) \in L_2(\Omega)$ and $f_1(x, y) \in W_2^1(\Omega)$ it is required to determine the function $u = u(x, y, t)$.

Let the function $u(x, y)$ be unknown and about the solution of direct problem (5)-(8) the following additional information is known

$$u|_{t=T} = f_2(x, y), (x, y) \in \Omega. \quad (9)$$

The inverse problem is in determining the pair of function $u = u(x, y, t)$, $v = v(x, y)$ from relations (5)-(9) for the given functions $f_1(x, y)$, $f_2(x, y)$. Instead of this problem let us consider the following problem: to find the function $u(x, y)$ from the class

$$v \in V = \{v(x, y) : v \in L_2(\Omega), \|v\|_{L_2(\Omega)} \leq M\} \quad (10)$$

such that together with the solution $u(x, y, t; v)$ of problem (5)-(8) it affords minimum to the functional

$$J(v) = \frac{1}{2} \int_{\Omega} [u(x, y, T; v) - f_2(x, y)]^2 dx dy \rightarrow \min \quad (11)$$

where $u = u(x, y, t; v)$ is the solution of problem (5)-(8) for $v = v(x, y)$, $M > 0$ is a given number. We call the function $u(x, y)$ a control, while the set V a class of admissible controls. We call this problem (5)-(8), (10), (11). Note that there is a close relation between inverse problem (5)-(9) and problem (5)-(8), (10), (11). If in problem (5)-(8), (10), (11) there exists a control u_* from V

, such that $\min J(v) = J(u_*) = 0$, then in problem (5)-(9) the additional condition (9) is fulfilled.

Instead of the functional (11) so that the optimality condition to be obtained in the future is not broken, let's look to the functional

$$J_{\alpha}(v) = \frac{1}{2} \int_{\Omega} [u(x, y, T; v) - f_2(x, y)]^2 dx dy + \frac{\alpha}{2} \int_{\Omega} v^2(x, y) dx dy \quad (11')$$

The problem consist of to find a control $v \in V$ such that, together with the solution of the problem (5)-(8), gives a minimum to the functional (11').

From the results of the papers [5,6] it follows that for each fixed control $u(x, y)$, problem (5)-(8) has a unique solution from $W_2^1(Q)$ and this solution has the properties

$$u \in C([0, T]; W_2^1(\Omega)), \quad \frac{\partial u}{\partial t} \in C([0, T]; L_2(\Omega)),$$

and furthermore, the following estimation is valid

$$\|u\|_{W_2^1(\Omega)} + \left\| \frac{\partial u}{\partial t} \right\|_{L_2(\Omega)} \leq c [\|v\|_{L_2(\Omega)} + \|f_1\|_{W_2^1(\Omega)}] \quad \forall t \in [0, T] \quad (12)$$

Here and in the sequel, different constants independent of the estimated quantities and admissible controls will be denoted by c .

On Solvability of Problem (5)-(8), (10), (11')

Theorem 1. If the conditions posed in formulation of problem (5)-(8), (10), (11') are fulfilled, then the set of optimal controls of problem (5)-(8), (10), (11')

$$V_* = \{v_* \in V : J_{\alpha}(v_*) = J_* = \inf_{v \in V} J_{\alpha}(v)\}$$

is not empty, is weakly compact in $L_2(\Omega)$ and any minimizing sequence $\{u_m(x)\}$ weakly in $L_2(\Omega)$ converges to the set V_* .

Theorem 2. Then for the optimality of control $v_* = v_*(x, y) \in V$ in problem (5)-(8), (10), (11)' it necessary and sufficient the inequality

$$\int_{\Omega} [-\psi_*(x, y, 0) + \alpha v_*(x, y)](v(x, y) - v_*(x, y)) dx dy \geq 0 \quad (13)$$

be fulfilled for any $v = v(x, y) \in V$, where $\psi_*(x, y, t) = \psi(x, y, t; v_*)$ – is the solution of problem $u_{k,n}(T) = f_2^{(k,n)}$ - $u_m \rightarrow u$ weakly in $L_2(\Omega)$ as $m \rightarrow \infty$ for $v = v_*$.

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METHODS OF SOLVING PROBLEMS RELATED TO THE VOLUME AND SURFACE AREA OF ROTARY BODIES IN THE HIGH CLASS GEOMETRY COURSE

Amanzhol Tansholpan

Kazakh National Pedagogical University named after Abai,
Faculty of Mathematics, Physics and Informatics,
"7M01501-Mathematics", 2nd year graduate student
Research supervisor: **Nurbayeva Dilara**
PhD, associate professor (associate professor) m.a

ЖОҒАРЫ СЫНЫП ГЕОМЕТРИЯ КУРСЫНДА АЙНАЛУ ДЕНЕЛЕРІНІҢ КӨЛЕМІ МЕН БЕТІНІҢ АУДАНЫНА БАЙЛАНЫСТЫ ЕСЕПТЕРДІ ШЕШУ ӘДІСТЕРІ

Аманжол Таңшолпан Сайлауқызы

Абай атындағы Қазақ ұлттық педагогикалық университеті,
Математика, физика және информатика факультеті,
«7M01501-Математика», 2-курс магистранты
Ғылыми жетекші: **Нурбаева Дилара Муратовна**
PhD, қауымдастырылған профессор (доцент) м.а

Abstract

In the article, the methods of solving problems related to the volume and surface area of the bodies of rotation in the high school geometry course are considered. Ways to use the basic formulas related to the volume and surface area of cylinders, cones and spheres in solving problems are suggested.

The article shows ways to solve tasks of different levels, from simple problems to complex and applied problems. In addition, opportunities for using interactive methods and visual aids are provided to improve the learning process.

Аңдатпа

Мақалада жоғары сынып геометрия курсына айналу денелерінің көлемі мен бетінің ауданына байланысты есептерді шешу әдістері қарастырылады. Цилиндр, конус және шар тәрізді денелердің көлемі мен бетінің ауданына қатысты негізгі формулаларды есептерді шешуде қолдану тәсілдері ұсынылады.

Мақалада қарапайым есептерден бастап, күрделі және қолданбалы есептерге дейінгі түрлі деңгейдегі тапсырмаларды шешу жолдары көрсетіледі. Сонымен қатар, оқыту процесін жақсарту үшін интерактивті әдістерді, көрнекі құралдарды пайдалану мүмкіндіктері қарастырылған.

Key words: bodies of rotation, geometry, figure, space, cone, cylinder, volume, formulas.

Кілт сөздер: айналу денелері, геометрия, фигура, кеңістік, конус, цилиндр, көлем, формулалар.

Мектепте геометрияның оқушылардың жан-жақты даму міндеттерін шешуде үлкен мүмкіндіктері бар. Геометрия шынайы объектілерді бейнелеу ерекшелігімен логика мен көрнекілікті, жалпылау мен дербестілікті, абстрактылы мен нақтылықты қамтиды. Осының бәрі қоршаған әлемді танып білудің ерекше әдістерінің бірі – геометриялық әдіспен іске асады.

Геометрияның көрнекілікке негізделген оқыту әдістері ерекше рөл атқарады. Оқушылардың бейнелік ойлауының даму процесі геометриялық денелер арқылы жүзеге асырылады. Олардың ішінде, айналу денелерінің орны ерекше.

Жоғары сынып геометриясында айналу денелері кеңістіктегі күрделі фигуралар болып табылады. Айналу денелеріне байланысты есептерді шешу оқушылардың геометриялық білімдерін, кеңістікте елестету қабілетін және пәнаралық байланысты кеңейтуге мүмкіндік береді.

Айналу денелерінің көлемі мен бетінің ауданына қатысты есептерді шешу жүйелі әдістерді қолдануды қажет етеді. Мұндай есептерді шешу барысында теориялық білімді дұрыс қолдану, логикалық талдау және формулаларды есепке алу маңызды.

Қазіргі уақытта жаңартылған білім мазмұнындағы орта мектепке арналған геометриядан оқулықтар мен оқу-әдістемелік кешендер қарқынды дайындалуда. Жоғары сынып мазмұндарындағы оқу бағдарламасында айналу денелері және олардың элементтері, қасиеттеріне арналған практикалық жақтарының болуы көбірек кездеседі. Бұл жоғары сыныптарда оқытылатын айналу денелері мен олардың элементтерін оқыту әдістемесін жетілдіру және мұғалімдерге көмек ретінде әдістемелік ұсынымдар мен материалдар әзірлеу міндетін қояды.

Айналу денесінің көлемін геометриялық және интегралдық әдістермен табуға болады. Әр әдістің қолдану аумағы дененің пішініне, айналу осіне және берілген шарттарға байланысты. Төменде екі әдісті егжей-тегжейлі қарастырайық:

1. Геометриялық әдіс

Геометриялық әдіс айналу денесінің көлемін табу үшін фигураның белгілі көлем формулаларын қолдануға негізделген. Бұл әдіс тек дұрыс пішінді цилиндр, конус, шар сияқты фигуралар үшін қолайлы.

Цилиндрдің көлемі оның табанының ауданы мен биіктігінің көбейтіндісіне тең болады:

$$V = S \cdot h = \pi R^2 h \quad (1)$$

мұндағы S - цилиндр табанының ауданы, R - табанының радиусы, h - цилиндрдің биіктігі.

Конустың көлемі оның табанының ауданы мен биіктігі көбейтіндісінің үштен біріне тең болады:

$$V = \frac{1}{3} \pi R^2 h \quad (2)$$

мұндағы R - конус табанының радиусы, h - конустың биіктігі.

Радиусы R -ге тең шардың V көлемі мынадай формуламен есептеледі:

$$V = \frac{4}{3} \pi R^3 \quad (3)$$

2. Интегралдық әдіс

Интегралдық әдіс күрделі айналу денелерінің көлемін дәл есептеуге мүмкіндік береді.

Егер қисық $y = f(x)$ $[a; b]$ аралығында x -осі бойымен айналса:

$$V = \pi \int_a^b [f(x)]^2 dx \quad (4)$$

Егер қисық $y = g(y)$ қисығы y - осі бойымен айналса:

$$V = \pi \int_c^d [g(y)]^2 dy \quad (5)$$

формулалары арқылы есептеледі.

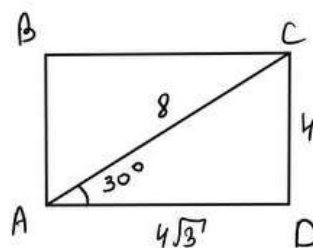
Осы әдістерді толық зерттеу үшін келесі тапсырмаларды қарастыруға болады:

1-мысал:

Цилиндрдің жазбасы диагоналі 8-ге тең және табанымен 30° бұрыш жасайтын тік төртбұрыш. Цилиндрдің көлемін табыңыз.

Есепті шығаруда геометриялық әдісті қолданайық.

Шешуі:



1-сурет

1) AD – шеңбердің ұзындығы, демек $C = 2\pi R$ формуласын қолданып радиусты анықтаймыз:

$$R = \frac{4\sqrt{3}}{2\pi} = \frac{2\sqrt{3}}{\pi}$$

2) Табанының ауданын $S_{\text{таб.}} = \pi R^2$ формуласын қолданып табамыз:

$$S_{\text{таб.}} = \pi \cdot \left(\frac{2\sqrt{3}}{\pi} \right)^2 = \frac{12}{\pi}$$

3) Цилиндрдің көлемін $V = S_{\text{таб.}} \cdot h$ формуласын қолданып табамыз:

$$V = S_{\text{таб}} \cdot h = \frac{12}{\pi} \cdot 4 = \frac{48}{\pi}$$

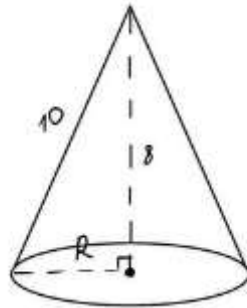
Жауабы: $\frac{48}{\pi}$

2-мысал:

Конустың жасаушысы 10, ал биіктігі 8-ге тең. Конустың көлемін табыңыз.

Есепті шығаруда геометриялық әдісті қолданайық.

Шешуі:



2-сурет

1) Конустың табан радиусын Пифагор теоремасы арқылы анықтаймыз:

$$R = \sqrt{10^2 - 8^2} = \sqrt{36} = 6$$

2) Табанының ауданын $S_{\text{таб}} = \pi R^2$ формуласын қолданып табамыз:

$$S_{\text{таб}} = \pi \cdot R^2 = \pi \cdot 36 = 36\pi$$

3) Цилиндрдің көлемін $V = S_{\text{таб}} \cdot h$ формуласын қолданып табамыз:

$$V = \frac{1}{3} \cdot 36\pi \cdot 8 = 96\pi$$

Жауабы: 96π

3-мысал:

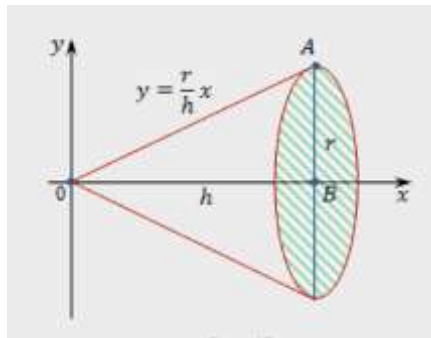
Биіктігі 7 см, табанының радиусы 5 см болатын конустың көлемін табыңыз.

Есепті екі әдіспен шығарайық.

Шешуі:

1-әдіс. Интегралдық әдіс

Координаталар жүйесін Ox осі конустың биіктігіне сәйкес, ал конустың биіктігі координаталар бас нүктесіне сәйкес келетіндей алайық. (3-сурет) Онда OA түзуінің теңдеуі $y = \frac{r}{h}x$, яғни $y = \frac{5}{7}x$ түрінде жазылады.



3-сурет

(4) формуланы қолданып, келесі жауапты аламыз:

$$V = \pi \int_0^h y^2 dx = \pi \int_0^7 \frac{25}{49} x^2 dx = \frac{25\pi}{49} \cdot \frac{x^3}{3} \Big|_0^7 = \frac{175\pi}{3} \text{ куб. бірлік}$$

2-әдіс. Геометриялық әдіс

(2) формуланы қолданатын болсақ:

$$V = \frac{1}{3} \pi R^2 h = \frac{1}{3} \pi \cdot 25 \cdot 7 = \frac{175\pi}{3} \text{ куб. бірлік}$$

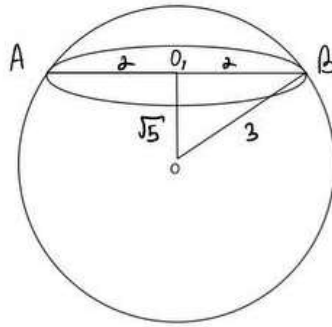
Жауабы: $\frac{175\pi}{3}$ куб. бірлік

4-мысал:

Шардың центрінен $\sqrt{5}$ қашықтықта болатын шар қимасының диаметрі 4-ке тең. Шардың бетінің ауданын табыңыз.

Есепті шығаруда геометриялық әдісті қолданайық.

Шешуі:



4-сурет

Қиманың диаметрі 4-ке тең болса, қиманың радиусы 2-ге тең екенін білеміз.

1) Шардың радиусын Пифагор теоремасын қолданып табамыз:

$$R = \sqrt{(\sqrt{5})^2 + 2^2} = \sqrt{5 + 4} = \sqrt{9} = 3$$

2) Шардың бетінің ауданын $S = 4\pi R^2$ формуласын қолданып анықтаймыз:

$$S = 4\pi R^2 = 4\pi \cdot 9 = 36\pi$$

Жауабы: 36π

5-мысал:

$y = x^2$ параболасын x – осімен $x \in [0,1]$ аралығында айналдырғанда шыққан дененің көлемін табыңдар.

(2) формуланы қолдансақ:

$$V = \pi \int_0^1 [x^2]^2 dx = \pi \int_0^1 x^4 dx = \pi \cdot \frac{x^5}{5} \Big|_0^1 = \pi \cdot \frac{1}{5} = \frac{\pi}{5} \text{ куб. бірлік}$$

Жауабы: $\frac{\pi}{5}$ куб. бірлік.

Геометриялық және интегралдық әдістерді салыстыру

Ерекшелігі	Геометриялық әдіс	Интегралдық әдіс
Қолдану аймағы	Қарапайым денелер: цилиндр, конус, шар және т.б.	Күрделі пішіндер: еркін қисықтармен шектелген аймақтар
Есептеу дәлдігі	Шамамен (егер дене дұрыс емес пішінде болса, қате береді)	Дәлдік жоғары (есептеу нақты формуламен жүргізіледі)
Есептеу әдісі	Дайын формулалар қолданылады.	Интегралдау арқылы көлем анықталады.

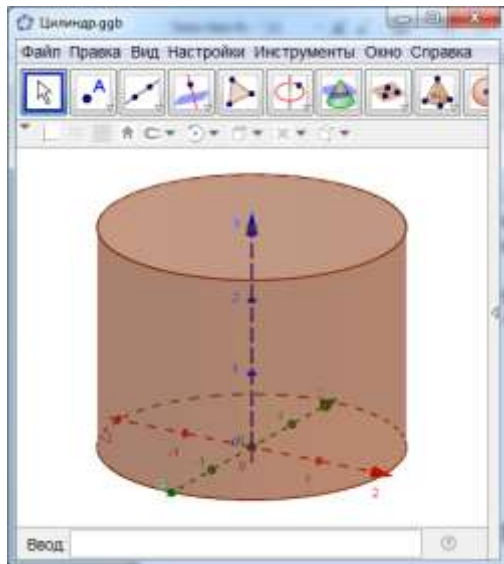
Айналу денелері бөлімін оқытудың көрнекілігін арттыру үшін тегін таратылатын GeoGebra компьютерлік программасын пайдалануға болады. Бұл программаны <http://geogebra.org> ресми сайтынан жүктеп алуға болады.

Бұл программа әртүрлі алгебралық және геометриялық есептерді шешуге және модельдеуге, функциялардың графиктерін салуға, функцияның ең үлкен және ең кіші мәндерін, шегін, туындысын, интегралын табуға, жазық және кеңістіктегі фигураларды кескіндеуге, қосымша салулар жасауға, суреттердің анимацияларын жасауға мүмкіндік береді.

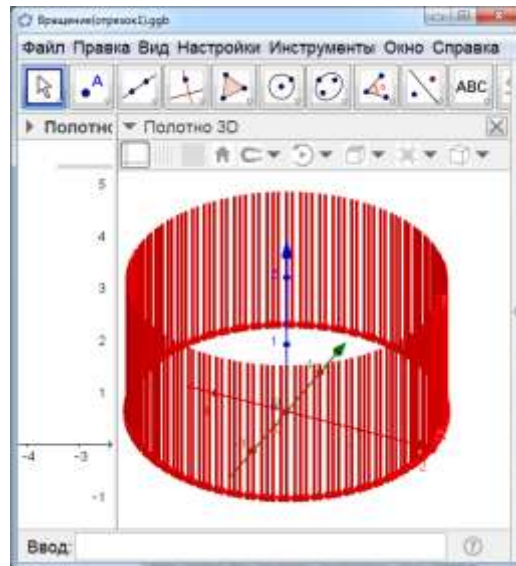
GeoGebra программасы арқылы геометриялық тәжірибелер, эксперименттер, формулалар мен теоремаларға иллюстрация жасауға, геометриялық шамалар арасында тәуелділіктерді анықтауға және т.б. болады.

5-суретте осы программаның жұмыс терезесі көрсетілген. Оның жоғарғы жағында мәзір орналасқан. Егер тінтуірдің сол жақ пернесімен пирамиданың суреті бар терезесін басса, онда әртүрлі көпжақтарды модельдеуге көмектесетін құралдары бар қосымша терезелер ашылады.

6-суретте осы программаның көмегімен салынған цилиндр көрсетілген.



5-сурет



6-сурет

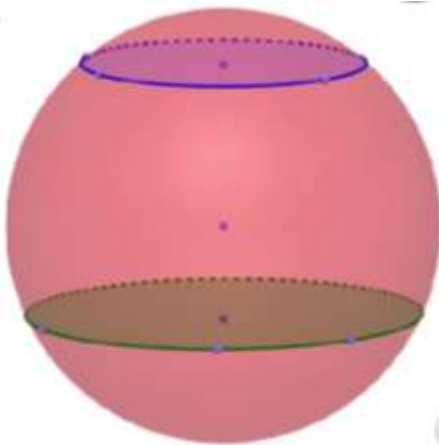
GeoGebra программасының көмегімен кеңістіктегі фигураларды модельдеумен қатар жазық және кеңістіктегі фигураларды ось бойымен айналдырғанда пайда болатын фигураларды да салуға болады.

Мысалы, 6-суретте Oz осіне параллель кесіндіні осы осьтің бойымен айналдырғанда пайда болған фигура көрсетілген.

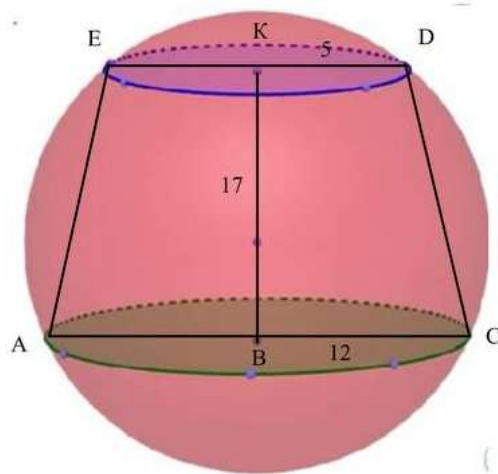
6-мысал:

Шардың центрі арасында жатқан шарды қиятын екі параллель жазықтықтардың аудандары 144π және 25π . Егер параллель жазықтықтар арасындағы қашықтық 17-ге тең болса, шардың бетінің ауданын табыңыз.

Шешуі: Бұл есептің сызбасын сызуда Geogebra қосымшасын пайдаланып, оқушыға 3D форматта көрсеткен тиімді. Төменде есептің сызбасы оқушыға түсінікті етіп көрсетілген.



7-сурет



8-сурет

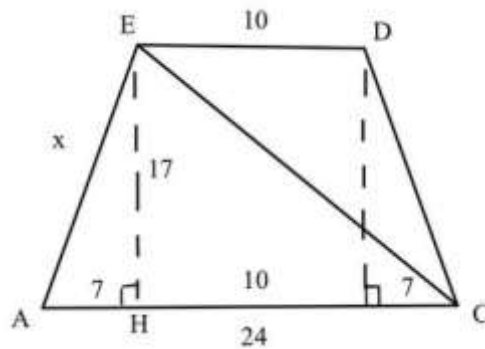
1) Қималардың аудандары арқылы олардың радиустарын тауып аламыз:

$$S_1 = 144\pi = \pi r_1^2 \rightarrow r_1 = 12$$

$$S_2 = 25\pi = \pi r_2^2 \rightarrow r_2 = 5$$

Шардың бетінің ауданын табу үшін шардың радиусын табуымыз керек. Шардың радиусы трапецияға сырттай сызылған шеңбердің радиусына тең екенін көруге болады.

2) AEDC - трапециясын қарастырайық:



9-сурет

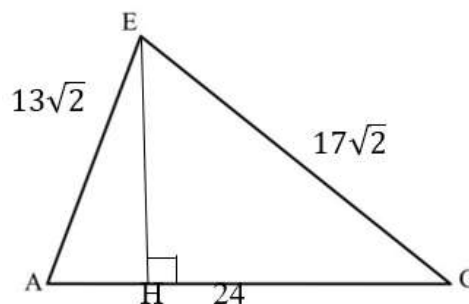
$$AE = x = \sqrt{7^2 + 17^2} = \sqrt{338} = 13\sqrt{2}$$

3) ЕС диагоналін табу үшін $\triangle EHC$ қарастырайық:

$$EC = \sqrt{HC^2 + EH^2} = \sqrt{17^2 + 17^2} = 17\sqrt{2}$$

$AEDC$ трапециясына сырттай сызылған шеңбердің радиусы $\triangle AEC$ үшбұрышына сырттай сызылған шеңбердің радиусымен тең.

4) $\triangle AEC$ бойынша:



Сырттай сызылған шеңбердің радиусын табу үшін $R = \frac{abc}{4S}$ формуласын қолданамыз.

Сонда,

$$R = \frac{abc}{4S} = \frac{13\sqrt{2} \cdot 17\sqrt{2} \cdot 24}{4 \cdot \frac{1}{2} \cdot 17 \cdot 24} = 13$$

5) Шардың бетінің ауданын табамыз:

$$S = 4\pi R^2 = 4 \cdot 13^2 \cdot \pi = 676\pi$$

Жауабы: 676π

Жоғары сынып геометрия курсында айналу денелерінің көлемі мен бетін есептеу әдістері оқушылардың кеңістіктік ойлау қабілетін дамытуда маңызды рөл атқарады. Бұл тақырып арқылы оқушылар математика мен геометрияның практикалық қолданысын көріп, олардың инженерия, физика және басқа да ғылым салаларындағы маңызын түсінеді.

Есептерді шешу әдістері, әсіресе интегралдық және геометриялық тәсілдер, оқушыларға түрлі әдістерді қолдану арқылы тапсырмаларды шешуге мүмкіндік береді. Интегралдық әдіс күрделі айналу денелерінің көлемін дәл есептеуге мүмкіндік берсе, геометриялық әдіс оқушылардың негізгі формулаларды түсініп, оларды қолдана алуын дамытады.

Заманауи технологиялардың, соның ішінде GeoGebra сынды құралдардың енгізілуі оқу процесін интерактивті, тиімді және қызықты етеді. Бұл оқушылардың тек теориялық білімін арттырып қана қоймай, күрделі есептерді визуализациялау арқылы ұғымдарды тереңірек түсінуін қамтамасыз етеді.

Айналу денелеріне байланысты есептерді шешу барысында оқушылар математиканың негізгі ұғымдарын (көлем, аудан, интеграл және т.б.) терең меңгереді. Бұл олардың математикалық ойлау қабілетін, деректерді талдай білу дағдыларын және логикалық пайымдауын нығайтады. Сондықтан бұл тақырыптың оқу бағдарламасындағы маңыздылығы зор және оны оқыту әдістерін жетілдіру білім сапасын арттыруға ықпал етеді.

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Medical sciences

PROBLEMS WITH ORAL MUCOSA INFLAMMATION AMONG PATIENTS WITH REMOVABLE DENTURES

Pruts Halyna

MD, Assistant, Department of Stomatology and Maxillofacial Surgery
Comenius University Bratislava, Slovakia

Mochalov Iurii

DMedSc, Professor, Department of Surgical Dentistry and Clinical Disciplines
Uzhhorod National University, Ukraine

Guzo Nutsu

MD, PhD student, Department of Surgical Dentistry and Clinical Disciplines
Uzhhorod National University, Ukraine

Mykhajlychenko Bohdan

MD, PhD student, Department of Therapeutic Dentistry
National University of Healthcare of Ukraine, Ukraine

Yakovenko Mykhailo

Student, I.Ya. Horbachevsky Ternopil National
Medical University, Ukraine

Mikhlin Roksolana

MD, PhD student, Department of Surgical Dentistry and Clinical Disciplines
Uzhhorod National University, Ukraine

The disorders of chewing, swallowing, salivation, and various other defects contribute to increased oral microorganisms presentation. Many patients who use removable acrylic plate dentures suffer from "prosthetic stomatitis". The causes of such stomatitis may be residual monomers, dyes, opacifiers, and plasticizers. National and regional population studies performed in different countries such as Denmark, Slovenia, Spain, and Turkey reported the prevalence of prosthetic stomatitis in - 65%, 14.7%, 19.6%, and 18.5%, respectively. The prevalence of prosthetic stomatitis in patients using removable plate prostheses is estimated to be about 30-36%, and according to other information, the prevalence is higher - 59% and 78%. The prevalence of prosthetic stomatitis is also associated with age, with a higher incidence in age groups between 41 and 60 years. Statistics report the prevalence among women is higher (84-86%). In the vast majority of cases, prosthetic stomatitis is more common in women than in men, with 60-70% of cases occurring during menopause [1].

Acrylic removable plate prostheses are a multi-vector irritant that has a toxic, allergic, and traumatic effect on the tissues of the prosthetic bed in 40% of people, which is clinically manifested in the form of inflammatory and destructive changes in the tissues of the prosthetic bed. An orthopedist-dentist needs to mind the number of concomitant diseases of the patient because it has been established that in the process of developing pathological conditions of the human body, the adaptive and compensatory demand on the system of organs of the dental-maxillary system increases [2].

There is a relationship between the age of patients, the volume of structures, and the adaptation time necessary to restore the dental-maxillary system. The reviewed literature sources allow us to state that acrylic plastics used in manufacturing removable dentures contain several components that act in the oral cavity as allergens-haptens. Penetrating the body through the mucous membrane can cause its changes due to irritation by the residual monomer and components that are part of the partial lamellar prosthesis. The phenomenon of inflammation of the mucous membrane of the prosthetic bed is described in more than 40% of patients using removable dentures. The authors also describe various pathological changes in the mucous membrane of the oral cavity in 66.7% of people with acrylic plastic dentures. Cases of a decrease in the volume of the mucous membrane of the prosthetic bed, which is due not only to age but also to the action of the dentures, which led to a deterioration in the tropism of the epithelium, are described. The literature contains information about significant changes in the mucous membrane of the prosthetic bed in people who wear dentures around the clock and have poor oral and prosthetic hygiene [3].

Removable plate prostheses can be colonized by microorganisms that form a biofilm layer. The toxic effect of chemical components of denture bases on the mucous membrane enhances the adhesion

of pathogenic microorganisms. The association of *Candida albicans* and *Staphylococcus aureus* has high adhesiveness to the mucous membrane of the oral cavity. It has been shown that the use of lamellar prostheses made of acrylates reduces the pH of the oral fluid compared to thermoplastics, which in turn increases the adhesive property of fungi to the mucous membrane and prostheses and enhances the colonization of the mucous membrane by *C. albicans*, *S. aureus*, *Streptococcus mutans*, which contributes to the development of prosthetic stomatitis.

Several studies note that only 25-30% of patients who use removable dentures regularly follow the rules of oral hygiene, which indicates patients' lack of motivation to care for removable dentures and sometimes even elementary ignorance of the rules for using them. Studying the level of hygienic care for removable dentures in people over 80 years old, founded plaque on dentures in 86% of cases. The mode of use of removable dentures also plays a significant role. Thus, 60.8% of patients use removable dentures around the clock and 31% - during the day. Inadequate hygiene of the denture, leading to the accumulation of plaque in areas of microretention on the surface of the denture, is of particular importance, since they are ideal food for fungi and other microorganisms that cause the development of infections and inflammation on the mucous membrane. Poor oral hygiene and dentures contribute to qualitative and quantitative changes in the oral microbiota and the appearance of new, non-specific microorganisms (pathogenic staphylococcus - from 10 to 22%, *Escherichia coli* - from 10% to 63%, enterococcus - up to 22%).

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THE INFLUENCE OF SPORTS PHYSICAL LOADS ON THE ADAPTIVE CAPABILITIES OF THE CARDIOVASCULAR SYSTEM IN ATHLETES

Guliyeva Sevinch

Azerbaijan Sports Academy, Baku, Azerbaijan

Abstract

In order to study the influence of sports physical loads of various orientations on the adaptive capabilities of the cardiovascular system, heart rate, blood pressure, respiratory rate and vital capacity of the lungs were recorded. Small differences in the indicators can be attributed to the individual characteristics of an athlete in cyclic sports (athletics) than in acyclic sports (judo), where a more acute reaction of the body to physical load is observed.

In a comprehensive analysis of the dynamics of gas exchange indicators with an increase in load power, the value of oxygenation in representatives of cyclic sports is predominantly determined by a change in respiratory rate, compared with representatives of acyclic sports, in whom the value of vital capacity of the lungs is equally determined by oxygenation and respiratory rate.

Keywords: physical load, cardiorespiratory system, cyclic and acyclic sports.

1. Introduction

Sports physical activity plays an important role in the formation of the body's functional reserves. Any discrepancy between the volume and intensity of physical activity and the body's adaptive capabilities can cause a number of changes in the body's functional systems. At the same time, recording the heart rate is a necessary condition for studying the body's reserve capabilities. The transition from the urgent stage to stable long-term adaptation under the influence of sports physical activity is based on the formation of functional changes, primarily in the cardiovascular system and its regulatory mechanisms [1, 2, 3]. In terms of the above, it seems relevant to study the influence of sports physical activity of various types on the adaptive capabilities of the cardiovascular system.

1.1. Methods

A total of 30 students from ASAPES took part in the study, of whom 10 athletes were representatives of acyclic sports (judoka), 10 athletes were representatives of cyclic sports (athletics) and 10 were non-sports students. The general training experience of athletes was from 2 to 5 years, and the age limit was 18-20 years. The average age of the studied students was 18-20, the average height was 176 ± 1.9 cm, and the average weight was 69.4 ± 3.5 kg.

The Ruffier index was used to assess the functional status of the student's cardiovascular system. As physical activity, 30 times sit-to-stand movement was used for 30 seconds. The integrated indicator of the functional state of the students' body is the Ruffier index (Ri), which is calculated based on the heart rate (HR) at rest (HR_r) and in the first (HR₁) and second minutes (HR₂) after the end of the dose load. Adaptation indicators were determined by the increase of the heart rate in the first minute compared to the resting heart rate, which was taken as 100%. Adaptation indicators were determined by the increase in heart rate in the first minute compared to the heart rate at rest, which was taken as 100%. Recovery parameters were determined by the residual increase in the second minute relative to the heart rate at rest, taken as 100%. The obtained results were evaluated according to the scale developed by M.G. Garayev and R.G. Gaibov [4] (Table 1).

Table 1.

Heart rate indicators according to the Ruffier index

Level of functional status	Ri indicator	HR ₁ increase in %	HR ₂ residual growth in %
High	0 and below	30 or less	4 or less
Above average	1-5	31-40	5-9
Medium	6-10	41-50	10-14
Below average	11-15	51-60	15-19

Indicators of the external respiratory system were studied using a portable spirometer. Assessment of the reserve and functional capacity of the respiratory component of adaptation includes the

determination of the vital capacity of the lung (VCL) and respiratory rate (RR). In addition, blood pressure (BP, systolic blood pressure – SBP, diastolic blood pressure - DBP) was also measured.

The analysis of the results was carried out using the variance-statistical method of Student-Fisher.

111. Results and discussion

The assessment of the morpho-functional state of the athletes' body was carried out by recording the reaction of the cardiovascular (CVS) (heart rate - HR, arterial pressure - AP) and respiratory (respiratory rate - RR, vital capacity - VC) systems to the dosed load of athletes in cyclic (track and field) and acyclic (judo) sports.

As our studies have shown, athletes of both cyclic and acyclic sports have a rare heart rate ($P < 0.001$), and it should be noted that it was the rarest in the group of athletes involved in cyclic sports and amounted to 57.28 ± 1.84 beats/min. Our observations have shown that among athletes, the highest heart rate was observed in the acyclic group and corresponded to 63.23 ± 2.11 beats/min. When studying the heart rate indicators in the control group, i.e. the group of students not involved in sports, an increase (70.43 ± 1.51 beats/min) was revealed in its indicators compared to the heart rate in the groups of cyclic and acyclic sports.

Table 2.

Study of the state of the cardiovascular system in students engaged in cyclic and acyclic sports.

Indicators	Cyclic sports	Acyclic sports	Controls (non-sportsmen)
HRB, beats/min	$56.24 \pm 1.79^*$	$64.15 \pm 1.99^*$	70.38 ± 1.62
SBP, mm Hg	$112.25 \pm 3.30^*$	117.92 ± 3.41	119.08 ± 2.82
DBP, mm Hg	$66.79 \pm 1.81^{***}$	71.55 ± 2.12	73.69 ± 1.33
VCL, l	$6.10 \pm 0.71^*$	4.8 ± 0.91	3.8 ± 0.23
RR, beats/min	$14.0 \pm 1.72^*$	16.0 ± 2.07	20.0 ± 1.64
OX, %	97.5 ± 0.65	96.8 ± 0.32	95.5 ± 0.25

In our study of arterial pressure, we examined the values of systolic (SBP) and diastolic (DBP) pressure. Our studies showed that in all sports groups (cyclic and acyclic), the value of SBP and DBP was lower than in the control group, i.e. in the group of those not involved in sports. Among the sports groups, the highest SBP - 117.92 ± 3.41 mm Hg and DBP 71.55 ± 2.12 mm Hg in athletes was in the acyclic group. In men in the cyclic group, the values of SBP (112.25 ± 3.30 mmHg) and DBP (66.79 ± 1.81 mmHg) were significantly lower ($P < 0.05$; $P < 0.001$) than in the control group (119.08 ± 2.82 mmHg and 73.69 ± 1.33 mmHg).

The analysis of the heart rhythm revealed the economization of the functions of the cardiovascular system at rest in the majority of qualified athletes (82.0%). The heart rhythm was controlled under the influence of balanced influences of the sympathetic and parasympathetic divisions of the autonomic nervous system. At the same time, in track and field athletes, under the influence of cyclic sports physical loads, an increase in the activity of the parasympathetic autonomic nervous system was noted in comparison with those not involved in sports (SBP up to 110.0 ± 19.3 ms versus 68.9 ± 7.8 ms, respectively, $p < 0.01$), a moderate level of sympathetic and humoral-metabolic influences on the heart rhythm.

When studying the ventilation functions of the lungs at rest, maximum values were found in track and field students than in judoists. This is a larger value of VCL (up to 6.1 ± 0.7 l) compared to judo students (4.8 ± 0.9 l), which indicates the use of a large amount of oxygen in the ventilated air, which allows to significantly increase the degree of aerobic performance of the athletes' body.

Representatives of cyclic sports had significantly higher values of VCL and RR than representatives of acyclic sports. The indicators of bronchial patency had the lowest level in judoists ($p < 0.05$), which indicates a decrease in the overall throughput of the bronchial tree. In student athletes and student judoists with tension of adaptive-regulatory mechanisms, the indicators of respiratory volumes (VCL and RR) were significantly higher in track and field athletes ($p < 0.05$). Track and field athletes and judoists with a high degree of adaptation had a fairly prevailing positive balance of functional resources in relation to the category of track and field athletes and judoists with tension of the regulatory mechanisms of the cardiovascular system (CVS).

The lowest values of the studied parameters of external respiration ($p < 0.05$) were noted in track and field athletes and judoists with unsatisfactory adaptation of the cardiovascular system. The latter means that their respiratory system does not acquire the same economization of function that was observed in representatives of the two previous types of adaptation. This indicates a limitation of the reserve and potential capabilities of the respiratory system. An increase in bronchial patency in judoists with unsatisfactory adaptation allows for an increase in the degree of aerobic performance of the

athletes' body, which, in our opinion, can serve as a compensatory mechanism against the background of pronounced stress on the adaptive mechanisms of the cardiovascular system.

Our studies have shown the relationship between the heart rate and external respiration indices in qualified athletes. According to the data available in the literature, the analysis of correlations in track and field athletes showed that the index reflecting the autonomous regulation circuit and dependent on various neurohumoral influences on the sinus rhythm had a positive correlation with VCL. In the group of judoists, a positive correlation was found between VCL and HR.

Normally, arterial blood is saturated with oxygen by 95-97%. As has been proven earlier, blood oxygenation (BO) can characterize tissue oxygen saturation with a fairly high degree of reliability, which determines the choice of this particular research method [5]. Our measurements were taken within 10-40 seconds after performing physical exercise, depending on how quickly the device determined the specified indicators. The results of the experimental study of oxygen supply indicators revealed that oxygenation indicators during physical exercise remained high and did not differ from those before the load state. It can also be noted that no reliable differences were found between HR and BBO indicators in cyclic sports. In our opinion, the obtained facts indicate that the developed diffusion capacity of the lungs allowed the body to saturate the blood with oxygen, and during the time of overcoming the segment, oxygenation indicators did not decrease, i.e. the work took place mainly in aerobic conditions. This is evidenced by the pulse values after the load was performed - the maximum pulse was about 150-160 beats per minute. From which it follows that the cardiorespiratory system worked effectively and managed to pump blood and bind it with oxygen.

Thus, it is possible to evaluate the nature of the performed standard load as work in the zone of submaximal power or near-maximal aerobic power. Small differences in the presented indicators can be attributed to the individual-typological characteristics of the athlete, who mainly specializes in cyclic sports (athletics) rather than acyclic ones - hence, one can observe a more acute reaction of the body specifically to the running version of the training exercise [6, 7].

A comparative analysis of the obtained research results showed that no significant differences were observed in the RCS indicator in both groups at rest and after exercise. However, it should be noted that under standard exercise conditions, the RCS increase was more intense in the group of cyclic sports representatives compared to acyclic sports representatives. A direct proportional dependence of RCS on the physical exercise performed was revealed. According to the RR indicator, a more intense increase was observed in the group of cyclic sports representatives practically from the initial stage of the exercise. The intensity of the RR change at the initial stage of the exercise was practically the same, then, at maximum loads, a slowdown in the rate of RR increase was observed in the group of cyclic sports representatives. In a comprehensive analysis of the dynamics of gas exchange indicators with an increase in load power, the RCS value in cyclic sports representatives is mainly determined by the change in RR, compared to acyclic sports representatives, in whom the VCL value is equally determined by RCS and RR. This is consistent with the criteria for determining the functional reserves of the body's gas transport system based on the type of response to physical activity, proposed by leading researchers in this field [8].

Conclusion: A study of changes in gas exchange rates during physical activity showed that the dynamics of changes in oxygenation in the first minutes of the experiment were at an identical level in both studied groups of athletes, after which there was a significant increase in this indicator in athletes of cyclic sports. This is evidenced by some differences in the indicators, which indicate the dependence of oxygenation processes on the power of the load being performed. This is reflected in some changes in the indicators, which describe the dependence of oxygenation on the loading power. In terms of RR, it can be said that from the initial stage of the load, a more intense increase was observed in representatives of cyclical sports. In the initial phase of the load, the intensity of changes in RR was almost the same, then a slowdown (decrease) in the growth rate of RR was observed in transitional loads, in representatives of cyclical sports. In a comprehensive analysis of the dynamics of gas exchange indicators with an increase in loading power, the value of oxygenation in representatives of cyclical sports is determined by the change in VCL and RR in comparison with representatives of non-cyclical sports, where the value of RR is mainly equal. This corresponds to the criteria for determining the functional reserves of the body's gas transport system according to the type of response to physical activity proposed by leading researchers in this field [9].

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Pedagogical sciences

INNOVATIVE EDUCATIONAL ENVIRONMENT AS A CONDITION FOR IMPROVING THE PROFESSIONAL COMPETENCE OF A TEACHER

Kenzhebayeva Zhumagul Tolegenovna
Kazakhstan, Pavlodar

Abstract

Modern education requires teachers not only to have deep knowledge in their field, but also the ability to adapt to rapidly changing conditions. Significant changes are taking place in the educational system in the Republic of Kazakhstan, the creation of an innovative educational environment is becoming a key factor for improving the professional competence of teachers.

In this article, we will consider the concept of an «innovative educational environment», its impact on the development of professional competencies of teachers and what practical steps can be taken to implement it.

The creation of an innovative educational environment in pedagogical universities of Kazakhstan is a key condition for improving the professional competence of future teachers. This not only contributes to the development of their skills and abilities, but also forms a willingness to work in a modern educational environment. The introduction of innovative approaches to training will allow us to prepare qualified specialists,

Keywords: Innovative educational environment, modern technologies, professional competencies, innovations in education, practice orientation, interdisciplinarity.

Introduction

One of the key areas of educational innovation in Kazakhstan is the integration of modern technologies into the educational process. This includes the use of digital platforms, interactive teaching methods and distance learning resources, which allows you to improve the quality of education and adapt it to the needs of students.

One of the important areas of educational innovation is the introduction of new teaching methods and approaches that are actively used at the university. The innovative educational environment includes a variety of methods, technologies and approaches aimed at creating conditions for active learning and student development. It is not just a physical space, but also an atmosphere conducive to creativity, collaboration and critical thinking. The innovative environment involves the use of modern technologies, active teaching methods, as well as the introduction of new educational programs and courses.

To create an innovative educational environment, it is necessary to actively introduce modern technologies into the educational process, electronic textbooks, online courses and platforms for distance learning, simulations and virtual laboratories, which creates conditions for more effective learning for both teachers and students. The next step in creating an innovative educational environment is the professional development of teachers, regular refresher courses, seminars and trainings aimed at mastering new methods and approaches.

The current situation in the world related to the transition to distance learning has revealed problems related to its application. This has given universities the task of determining priorities in the content of curricula and focusing educational efforts on the competencies and skills necessary for work and life in conditions of uncertainty. These skills include digital skills, soft skills, interpersonal skills, and critical thinking skills.

In an innovative educational environment, teachers are faced with the need to master new technologies — from interactive whiteboards to online platforms. This requires constant training and self-improvement, which helps to increase their professional competence. Innovations in education require teachers to be flexible and able to quickly adapt to new methods and approaches. This forms their ability to think critically and solve non-standard tasks.

The innovative educational environment is understood as the whole complex of interrelated conditions that ensure human education, the formation of a teacher's personality with innovative and creative thinking and create professional competence.

The components of the innovative educational environment are: modern educational technologies, cooperation, information and communication technologies, competence-based activity approach, educational and methodological kit, multi-level educational content, lesson.

The competence-based activity approach is an approach that focuses on the result of education, and the result is not the amount of information learned, but the ability of a person to act effectively in various problematic situations. Otherwise, it is a system of pedagogical principles, attitudes and methods of activity that create conditions for the formation of competencies. It is important in the implementation of the competence-activity approach to comply with the principles of the activity approach and focus on the development of the motivational and personal sphere. Thus, the essence of the competence-based activity approach lies in the fact that the student himself is at the center of learning, and on the basis of the content of education his competence will be formed, and the process of assimilation of the selected content will be of an activity nature. Accordingly, the main goal will be the formation of the student's abilities to carry out various types of activities, mastering new competencies.

Speaking about "innovative educational technologies", one should keep in mind a system consisting of a competence-based approach that ensures the development of students' skills and abilities transmitted through modern means of communication; modern teaching methods - active and interactive methods of competence formation, which boils down to the interaction of students in the educational process; modern learning infrastructure based on information technology technological, organizational and communication features of the transfer of information to the student.

Innovative teaching methods are focused on an individual approach to each student. This requires teachers to have a deep understanding of student psychology.

An innovative approach in the educational system includes the processes of improving pedagogical technologies, as well as a set of methods, techniques and teaching tools. Innovation, as a theory and practice, is one of the most relevant topics for society in general and for the field of education and upbringing in particular. Currently, innovative pedagogical activity is becoming an important element of the educational process in any educational institution. It is she who lays the foundation for the training of competitive specialists and determines the ways of professional development of teachers. The creative approach of teachers is becoming a key characteristic of educational activities, indicating the transition to a higher level of organization of the educational process. The innovative approach reflects the current state of the educational system in our country in the context of international agreements aimed at its development.

Innovative pedagogical technologies are interconnected, interdependent and constitute a certain didactic system aimed at fostering values such as openness, honesty, benevolence, empathy, mutual assistance, and ensuring the educational needs of each student in accordance with his individual characteristics. Individualization of education. It allows you to take into account the personal interests and needs of students, which makes the learning process more exciting and effective.

New methods of knowledge assessment. Instead of traditional tests and control work, the focus is now on project protection. This assessment format allows you to more accurately measure the level of practical and theoretical knowledge of students.

Hybrid learning models. They put students' preferences and capabilities first, which allows them to take the course at their own pace and increases the chances of success. The essence of hybrid learning is to mix offline and online formats, sync and asynchronous in each lesson. In the most modern version, students participate in the lesson both face-to-face and online, and the recording is later used for asynchronous learning. This is a difficult task both from a technical point of view, because a lot of additional equipment is required, and from the point of view of teaching. Project-based and problem-oriented teaching methods. They increase the level of practical experience that students receive. Innovative educational environments encourage educators to think outside the box and develop new teaching methods. This contributes to the development of critical thinking and creativity, which are important professional competencies.

Modern technologies can be considered as a fundamental factor of changes in the higher education system. Inverted classes for students, open online courses for a wide audience, mobile applications with elements of gamification and game learning, as well as micropersonalization of the educational process based on constant assessments (learning analytics), and decision—making based on big data at various levels of the educational system and management are just some of the new opportunities that have arisen thanks to digitalization [1].

Innovative pedagogical technologies are one of the dominant trends in the development of mankind, they are specific and quite complex, require special knowledge, skills, and abilities. The

introduction of innovations is impossible without a research teacher who has a systematic mindset, a developed ability to create, and a formed and conscious willingness to innovate.

One of the main conditions for the successful implementation of innovative activities of a teacher is the creation of an educational environment in which the necessary organizational conditions will be provided. Providing methodological support for the educational process, the availability of a sufficient number of information and communication learning tools, such as monoblocks, laptops and interactive whiteboards. Internet access and organization of online conferences. The presence of competent teachers in research creative groups, diverse in age, experience and skill level, but with similar innovative potential for introducing innovations into the educational process, contributes to the creation of personnel conditions necessary for the successful implementation of innovative activities of teachers.

The formation and development of a master teacher through the prism of improving professional abilities are considered by I. A. Zyazyun, V. A. Krutetsky, N.A. Neudakhina, A. A. Rean, etc.

Introspection skills are essential for the professional development of a teacher. This shows the psychological readiness for professional activity. As already defined above, professional development is the constant growth and self-development of an individual.

Currently, problems related to the formation of students' competencies are being updated in pedagogical science and practice, which is reflected in the system of new requirements of a competence-based approach to training specialists, which are embedded in SES of higher professional education. A graduate of higher education is considered as an integral person with general, key, subject and socio-cultural competencies.

M.V. Klarin, V.P. Larina, P.E. Reshetnikov and others dealt with the issues of preparing a teacher for innovative activities and increasing his innovative potential [2].

Various researchers and scientists in the field of pedagogy and psychology have been studying the innovative educational environment. L. Vygotsky studied the social context of children's learning and development, which served as the basis for many modern approaches to innovation in education [3]. J. Dewey, a philosopher and teacher, emphasized the importance of experience and practical learning, which is relevant for creating innovative educational environments [4]. K. Robinson is a well-known expert in the field of creativity and education, who focuses on the need to reform educational systems for more effective implementation of innovations. The principles of Ken Robinson's "educational revolution" include: professional flexibility, proper use of technology, mentoring, and an individual approach to each student [5].

In addition, many modern researchers and practitioners in the field of pedagogy, such as Igor Kona, Svetlana Dyachenko, and others, are also actively studying and implementing innovative approaches in education.

Defining the essence of the innovative educational environment, Alisov E. A., Podymova L. S. note that its distinctive feature is «the synthesis of fundamental factors of personality development — the environment of life, upbringing, self-education and self-education aimed at realizing the creative potential of the student. Such an environment is a complex form of functioning and implementation of the fundamental principles of innovative pedagogy and is a single educational space of an educational institution, allowing to cooperate the efforts of all stakeholders and facilities in the qualitative training of future specialists» [6].

In the work of Shmeleva E. A. it is noted that «the formation of an innovative environment is aimed at developing the innovative potential necessary to generate new ideas, create new products, technologies, promote fundamental and applied research in various fields of knowledge, including pedagogical, to develop the innovative activity of the individual as the main criterion of readiness for innovation in the professional sphere» [7].

Despite the presence of a significant number of scientific studies devoted to the essence of innovation, innovation and pedagogical skills of a modern teacher, the issue of the impact of innovation on the professional growth of teachers in educational institutions remains insufficiently studied and confirmed.

The professional competence of a teacher includes not only the ability to respond promptly to changes in the educational sphere, but also the ability to effectively organize the educational process, as well as predict the results of their work.

The professional competencies of teachers are influenced by elements of the educational environment such as:

- *practice orientation*: teachers develop the skills necessary to integrate theory and practice, which allows them to better prepare students for real working conditions; take part in project activities and internships, which contributes to the renewal of knowledge and practical skills;

- *Individualization*: teachers learn to develop individual curricula, which requires them to have a deep understanding of the needs and characteristics of each student, which contributes to the development of adaptive learning and differentiation skills;

- *continuity*: teachers become participants in the process of continuing education, which allows them to maintain the relevance of their knowledge and skills; master new techniques and technologies, which contributes to their professional growth.

- *Digitalization and online education*: Educators are mastering digital tools and platforms, which expands their opportunities to create interactive and accessible learning. It also requires the development of data management and analytics skills to assess the effectiveness of the educational process;

- *Interdisciplinarity*: Teachers learn to integrate knowledge from different fields, which contributes to the development of critical thinking and creativity, which helps them prepare students to solve complex tasks that require knowledge from various disciplines.

Thus, the successful implementation of innovative approaches in education requires an integrated approach that takes into account both new technologies and methods, as well as organizational aspects. This will allow not only to develop the professional competencies of teachers, but also to improve the quality of education in general.

The introduction of innovative approaches to education will allow us to prepare qualified specialists who are able to solve urgent educational problems and meet the requirements of the time, for the following reasons:

Improving the quality of education. Educational technologies allow you to dive deeper into the material and assimilate information at a higher level.

Getting practical experience. The interactivity and dynamism of classes contribute to the active involvement of students and ensure that they gain practical experience not only within their specialty, but also in the field of communication and interaction.

Changing the format of knowledge assessment. Instead of traditional tests and control work, the focus is now on project protection. This assessment format allows you to more accurately measure the level of practical and theoretical knowledge of students.

Preparing for life in an ever-changing world. Training should develop mechanisms for innovation, find creative ways to solve vital problems.

It is important that educational institutions, employers and government agencies work closely together to achieve this goal. This is the only way to ensure the competitiveness of graduates and the sustainable development of the country's economy.

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Philological sciences

THE INFLUENCE OF VARIOUS LITERARY TRENDS ON THE DEVELOPMENT OF OUR POETRY AT THE END OF THE 20TH CENTURY

Rzayeva Qerenfil Zeygam

Senior Lecturer

Agjabedi Branch of Azerbaijan State Pedagogical University, Azerbaijan

Abstract

The article discusses the role of new trends characteristic of that period in the development of Azerbaijani poetry in the 90s of the last century. It is noted that literary trends usually appear in periods of time accompanied by the drama of thought and thought and arise in opposition to the dominant ideology of the era. Here, the role of two factors is decisive: an idea opposed to time and a new art that conditioned its birth, and new aesthetic principles arising in connection with the place of man in time. It is impossible not to pay attention to the obvious regularity here.

When talking about the role of literary trends in the development of Azerbaijani poetry, our national poetry as a whole should gradually become a subject of research. Because the classical philosophical poetry of the Middle Ages and the dominant trend and worldview in this poetry, Sufism, the romantic-philosophical poetry of the first half of the 20th century, the socialist-realism trend and poetry, as well as the poetry of the 60s, demand to be considered as free-thinking poetry.

Keywords: Azerbaijani poetry, literary trends, poetic thought, literary hero, literary trend, modernism trend, postmodernist trend and thought

Azerbaijani poetry has been of interest to scientific and theoretical thought from several directions since the years of independence. The main direction was to reveal the poetic embodiment of the realities of war, the tragic situations we are experiencing, including the feelings of patriotism and national freedom, as evidenced by Elchin Mehraliyev's "War and Literature" (2000); Almaz Binnetova's "Feelings of National Freedom in Poetry" (1997); Almaz Aliqizy's "Poetry of Freedom and Independence" (2001); Marziyya Najafova's "Poetry and the Problem of Karabakh" (2001); Hijran Nasibova's "National Liberation Movement in Contemporary Azerbaijani Poetry (1985-1995)" (2001); Anar Vaziroglu's "Stand Up, Azerbaijan! The National Patriotic Position in Contemporary Azerbaijani Poetry (1980-1990)" (2002) and other similar studies aimed at investigating the problem. In addition, Gurban Bayramov's "Lyric Hero and Time" (1986); In scientific publications such as Kamil Guliyev's "Lyrics, Modernity and Hero" (1983); Tofiq Hajiyev's "Our Poetry, Our Prose, Our Literary Language" (1990), Himalay Gasimov's "Creative Tendencies in Modern Azerbaijani Literature" (1998), Azerbaijani poetry was examined from the context of various topics, issues, genres, styles, language issues, and development trends, and more specifically, the emergence of new ideas about time and the position of man in time was explained.

Until the mid-90s, poetry was more on crazy, nervous notes, pathos, challenge, and the spirit of rebellion were more prominent. Starting from the mid-90s, a more restrained poetic style and loyal approach to poetry strengthened. This was the result of the gradually subsiding flames of war and the disappearing political chaos, which also conditioned a deeper look at the processes in artistic thought. Academician Isa Habibbeyli accurately and succinctly expresses his observations regarding the complex poetic landscape of the period: "Even in the most difficult moments in Azerbaijani literature, the power of the artistic word was able to maintain its strength and energy, as well as the level of art, in the example of poets such as Bakhtiyar Vahabzadeh, Mammad Araz, Khalil Rza, Sabir Rustamkhanli, Zalimkhan Yagub and others" (1. p. 302)

There are literary-historical conditions for the formation of new trends in poetry. We would not be mistaken if we say that various factors play a role in the emergence of literary trends. Literary trends usually arise in periods of time accompanied by the drama of thought and thought, and arise in opposition to the dominant ideology of the era. The role of two factors is decisive here: an idea opposed to time and the new art that conditions its birth, and new aesthetic principles arising in connection with the place of man in time. One cannot fail to pay attention to the obvious regularity here.

The trends that emerged in the West at the beginning of the 20th century were born out of the need to break classical molds, certain economic, political and social conditions, the inner restlessness of

man, the desire to freely express himself, to change the world, and a revanchist attitude towards the past and traditionalism (Revanchism is derived from the French word "revanche" and means revenge, vengeance, and revenge. However, unlike the neutral expression "revanch," the concept of "revanchism" has a clearly negative connotation and is applied not to any losing party, but only to the initiators of unjust and unprovoked aggression). These trends, which arose from the demands of the time, stood against socio-political dogmas and dominant ways of thinking, and were the product of innovative, free thinking and turned against a society that instilled all kinds of petty thinking and an attitude without alternatives.

The transitional period is always distinguished by its complexity, reassessment of social, artistic and scientific values. Artistic and aesthetic thought, as well as the criteria of its scientific and critical understanding, are also undergoing fundamental changes. Such turbulent times, as we know, are accompanied by the drama of thought and thinking. Chaos arises in people's thinking.

In this turmoil, the selection of European trends as a criterion, the excessive addiction to modern trends, the emergence of cases of appeals to poetics of a modernist nature, on the one hand, served the purpose of joining world processes and filling the gaps in literature, but on the other hand, it was interpreted as a sign of distrust and neglect of the possibilities of national artistic experience, as well as the conclusions of national scientific and theoretical experience that generalizes this experience.

Studying the poetry of the 90s in the context of new trends also requires, first of all, examining poetic examples against the background of the complex, mixed relationships of these methods.

The role of literary trends in the development of Azerbaijani poetry. When talking about the role of literary trends in the development of Azerbaijani poetry, our national poetry as a whole should gradually become a subject of research. Because the classical philosophical poetry of the middle period and the dominant trend and worldview in this poetry, Sufism, the romantic-philosophical poetry of the first half of the 20th century, the socialist-realism trend and poetry, as well as the 60s, demand to be considered as free-thinking poetry.

If we take the 60s as the stage of the rise of free poetry in our literature, we draw attention to the modernization tendencies in our poetry based on the series of Rasul Rza's "Colors", as well as dozens of other examples of poetry. The Man described and glorified in R. Rza's poetry is an image drawn to description and glorification due to global anxiety. Here, individual human interests are not in the foreground, but are prominent as the context of Man in general. Nevertheless, R.Rza's poems should be considered as the first steps on the path towards the effort of a person who was closed in himself during the Soviet era, turned from worldly to ecstasy, to rise above his own height and join the worldly man, and to gain the status of a contemporary (2, p.207).

The world context and the flow of contemporaneity that emerged in R.Rza's poetry later continued in the work of A.Kerim, F.Sadiq, F.Goja, A.Salahzadeh, I.Ismayilzadeh and other poets and showed itself in its own examples, rich in new poetic features.

"It would be a mistake to claim that modernist-oriented poetry gained a leading position in the poetry of the 60s-90s. Because this direction was still in its initial stage, and in the poems of Ali Karim, Fikret Sadiq, Fikret Goja, Alakbar Salahzadeh, Vagif Samadoglu, who were known as innovative and pioneering poets, this direction developed only in a single line. However, here, the features that distinguished those poems as a separate trend and separated them from traditional poetry were clearly visible" (3, p.349.)

What were these aspects? We believe that the answer we are looking for to this question also requires revealing and distinguishing the peculiarity of our poetry of the 60s-70s within the 20th century. Starting from the 60s, our national poetic thought can be born as examples of genuine lyrics. It would not be correct to confirm this only on the basis of the texts of young poets who entered poetry at that time. Even poets known as the most strict, ardent exponents and propagandists of Soviet ideology can be reborn starting from the 60s.

The 60s were a moment of transition to modernism in national poetry, we cannot speak of this stage as a complete stage of modernism. The poems created during this period, in addition to laying the foundation for a philosophical-intellectual trend, are distinguished by the breadth of their thinking, expressing concern and joy at a planetary level in relation to man, relegating the poet's interest in his own individual "I" to the background, and preferring to bring his attitude to social reality to the fore.

The new wave of Soviet-era Azerbaijani poetry, which emerged in the 60s-80s, was able to stand out by expanding the field of free poetry, and by doing so not only in terms of weight and form, but also in terms of gaining aesthetic content and opening the way to freedom of thought. Later, "although the topics it brought after the 90s were new, in the context of bringing the Human to the center of the poetic

text and giving it a new shade, our national poetry took its artistic and aesthetic ground precisely from the experience of a slightly earlier poetic thought, from the poetry of the 60s-80s, which it had passed through". (Gasyimbeyli Y. *National awakening and self-return lyrics*. Baku: Science and Education, 2012, pp. 407-408).

Starting from the 60s, the drawing of Human pain, which was the burden of world literature, to the center of literature was not only due to the softening of the regime, but also stemmed from the logical result created in the writer's psychology by the shattered and shattered dreams. The main artistic mood of the poetry of the 90s was the feeling of despair of the soul, which experienced the grayness of life and had no hope for tomorrow. This was also the factor that distinguished the poetry of this period from the decadent mood of the 70s and 80s. It is true, for example, that in 1968, V. Samadoglu said, "We met/We drank./We ate a little/from what was on the table,/a little from memories./We also extended our hands to the future/from time to time.../Bread is dyed/memories are bitter,/the future is burnt out..." - and in the same vein, he points to the meaninglessness of life, talking about the loss of the reality of clinging to time. In the same vein, the poet of the 90s not only points to the emptiness of life, the meaninglessness of the life lived, but also emphasizes it in a harsher, more epotage-like tone: "I have spent thirty years on the roads/I have lived without watching how the sun rises/sets/my dreams are drugs/my loves are neuroses/my life is gray" (Zahir Azamat). Of course, here too, the despair arising from global problems was at the forefront. But here were also added other pains of the individual: the loss of youth lost in the war, the disappearance of illusions about the future, the poet's life trembling in the grip of social problems, the daily pain, the longing for the light that does not appear from nowhere, etc.

To what extent are the modernist movements that began to emerge in our national poetry since the 1990s reflected in the work of poets, how much is the trace and experience of national standards here? To find an answer to this question, it is necessary to examine the inclination and appeal of the writers to a number of modernist movements (symbolism, impressionism, surrealism) in the past. As it is said in scientific literature, modernism is a movement that encourages the depiction of life as it is, without borders and without color. That is why life, which has become the subject of artistic thought with all its harsh, tragic and dramatic aspects, has such a dull and gray effect, and was not met with any certainty. Was life really so bitter, colorless and boring? Or are these the only moments that are depicted for modernists? Perhaps this factor lies in the denial of art that preceded the concept itself, in the underlying layer of protest against traditional thinking? The point is that life is not only a form of existence consisting of romance, a sum of things calculated for the good of everything. There are also "behind-the-scenes realities" of the world, of lived lives, of destinies... This was the subtle difference, the boundary that distinguished this movement from realism or naturalism. Naturalists did not depict the world, but rather its image. Realists, on the other hand, took a more critical and revealing approach, highlighting the problems of society in a generalized way. Modernism, on the other hand, was a view, a worldview calculated more on the expression of the individual, on the description of his individual life and thought.

Modernism itself aimed at those aspects of objective literature that literature was not accustomed to (or perhaps did not dare to!) speak out loud, it targeted underground moments. But as Espen Howardsholm wrote: "... is there any point in art that only records what we are accustomed to seeing?" Modernist art, of course, did not set out to be a stenographer of reality. It simply delved into the moments that became its subject matter so deeply and presented them with such natural, natural nuanced accuracy that the reader was surprised: he saw himself, his neighbor's life, the portraits of the situations and figures he encountered there. It should be noted that modernist aesthetics was a movement of thought that found its inspiration not in the crisis of life, but rather in the crisis of the attitude towards life. Modernists perhaps opposed traditional art because they saw in it the belief that everything would be fine. Because even realists thought that through criticism, exposure, or enlightenment they would achieve a miraculous revolution that would change the world order. Modernists, on the other hand, had completely abandoned progress.

In the early days of modernist poems, which expressed a new, different attitude to life, social events, and human relationships, and tried to express them not as they were, directly, but as they experienced them from within, through the world of emotions, love for Azerbaijan, the pain of the lost land, and the agenda topics brought forward by the era were interpreted as the main objects of description. In these poems, not only the form and rhythm changed, but also the very views, idioms, and approaches to life events seemed new. In general, according to the style of performance, facts, and approaches to life events, researchers (V. Yusifli, T. Alisanoglu, G. Bayramov, R. Ulusel, S. Mammadova, etc.) classified the poetry samples of the new era in the following forms: traditional poetry, experimental

poetry, modernist poetry, and avant-garde poems. In general, the classification of our poetic thought system is reflected in the mutual or mutually negating picture of traditional poetry and the search for modernization.

Did the expression of the mentioned modernist trends in poetry become visible in texts, did it come true, or did it only give rise to talking in the context of manifestation?! Traditional poetry, which is based on a direct style of expression, experimental poetry, as well as modernist and avant-garde poetry, insist on their survival even today. Simply with the factor of self-affirmation or consumption. For example, poetry classified as modernist today was distinguished by its experimental nature in the poetic space of the 1960s-80s. The time came, it affirmed itself, R.Rza's free wanderings in poetry became the basis for stimulating free poetry, V.Samadoglu's psychological life paved the way for a whole trend. Today, should we talk about that poetry as traditional or modernist poetry?! Of course, every era has its own series of innovations. The novelty of the independence period came in the form of the influx, application (the process mainly went this way), and promotion of European modernist trends in poetry.

Therefore, talking about innovations in the poetry of the independence period raises objections: did new poetry arise around the artificial application of European trends to our national poetry?! In my opinion, it did. Despite all the unsuccessful attempts, extreme inclinations towards Western trends, the poetry of the independence period was a poetry of a new nature, down to its past, philosophical-psychological notes on which it was based. At least the lives of the character in this poetry, the realities he had passed through, the sequence of tragic experiences, his inner changes, and sufferings were different, and he entered poetry as a Man of a new world. Literature, however, is always renewed with a new Man.

Postmodernism is the stage after modernism, it arose at the beginning of the 20th century, and it contains many modern worldviews. If modernism is a movement that directly rejects tradition and turns its back on literary and moral values, postmodernism does not reject these values.

Postmodernist Umberto Eco writes that "postmodernism is not a fixed chronological event, but a certain spiritual state" and "each era has its own special postmodernism". The expression "spiritual state" here is important in terms of showing the peculiarity of the movement. For postmodernists, both the world and the universe were superficial concepts. They were like heroes who were tired, exhausted, and exhausted from worldly affairs, and all of humanity was a vanity and a legend for them that was not worth thinking about. The yeast of U. Eco's classification of "spiritual state" comes from here. "According to postmodernism, the superficial, at the same time synthetic image of the world constitutes the essence of human consciousness. Therefore, this teaching claims that "it is necessary not to understand the world, but to accept it."

It is not overlooked that the attitude towards the image of God itself has undergone certain changes within the changes that have taken place in poetry since the 90s. At first glance, it seems that human cognition does not want to be accepted, and the emergence of the theme of God, or rather, a denialist attitude towards it, seems inconceivable among the ongoing changes.

Poets who complain about their fate, who are hopelessly lost in the transience of life and the affairs of the world, turned to God as a last resort. In these poems, God is still in the status of a source of hope, support, prayer, and supplication. Poets are tired of the fate written to them, of fate, are fed up with suffering, and object to God, who has written such fate, but they do not deny him. In these poems, God could be seen as the highest image. For example, in the poems of V. Samadoglu and R. Rovshan, faith in God was more important than faith in man.

The protest of the poetry of the 90s against rebellion, intransigence, and the hopeless suffering of the soul was revealed in the form of that "bitter laughter". The voice of silence, the silent cry of suffering, in the form of muted cries. This poetry, which reached the peak of irony against the enemy, fate, life, the world, death, and even God, influenced the entire process that followed it.

In such a case, the question arises, is it worth talking about the hero in postmodernism? As we know, the lyrical hero appears as a bearer of some idea, is perceived as an exponent of some mental state, thoughts and emotions.

Studies conducted on the topic give reason to think that the period of national independence, as well as playing a special role in the historical destiny of our people, is characterized as a unit of time that is of particular importance in the understanding of literature and art, and in its development on completely new foundations. During this period, poetry had to write in the mood of freedom of speech brought by the period of independence, on the one hand, and the Karabakh problem and the pain of war, on the other hand. As a post-Soviet space, Azerbaijan was also exposed to the problems of the transition

period, on the other hand, the process of reaching out to the world was stimulated, so the flow of global events and processes into national thought became stronger. As a result of this flow, the connection of poetry with society strengthened, it completely rooted itself in the existing process, tried to reflect historical processes and changes in public consciousness more promptly. The lyrical "I" included in the poetry of the years under study is primarily characteristic of the hero who carries the manifestation of world processes. However, this manifestation has a sharply different character from the poetry of the 60s, which was distinguished by its social aspect.

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**NEW PROFESSIONS IN INTERNET MEDIA:
AUTHORIZED AUTHORIZING, MULTIMEDIA EVENT, LONGRID, STORYTELLING**

Sura Seyid
Doctor of philosophy in philology, associate professor
Nakhchivan State University
<https://orcid.org/0000-0002-5628-0959>

**İNTERNET MƏDİADA YENİ PEŞƏLƏR:
SƏLAHİYYƏTLİ AVTORİNG, MULTİMƏDİA HADİSƏSİ, LONQRİD, STORİTELLİNG**

Surə Seyid
Filologiya üzrə fəlsəfə doktoru, dosent
Naxçıvan Dövlət Universiteti
<https://orcid.org/0000-0002-5628-0959>

**НОВЫЕ ПРОФЕССИИ В ИНТЕРНЕТ-СМИ
АВТОРИЗОВАННОЕ АВТОРСТВО, МУЛЬТИМЕДИЙНОЕ МЕРОПРИЯТИЕ, ЛОНГРИД,
СТОРИТЕЛЛИНГ**

Сура Сайид
доктор философских наук, доцент
Нахчыванский государственный университет
<https://orcid.org/0000-0002-5628-0959>

Abstract

Multimedia, for example, combines different modalities of perception of information and ways of regeneration of meanings in different sign systems. A multimedia story in online media becomes a barrier to robotization and automatic generation of news messages (which is what constitutes component authoring, for example), which erase the essence and meaning of journalistic activity. In this case, the choice of genre, style and language of publications on the Internet is in the area of responsibility of the editorial board and is part of the reactionary policy, but on the open Internet, the question of the availability of editorial and editing is far from clear.

Any publication on the Internet can be referred to the mass media, and its author can be called a journalist. It is also difficult to talk about a full-fledged editorial work in authoring journalistic projects, where the author himself on his own site determines the policy of publications, his and his associates.

Xülasə

Multimedia informasiya qavrayışının müxtəlif üsullarını və müxtəlif işarə sistemlərində mənaların bərpası üsullarını birləşdirir. Onlayn mediada multimedia tarixçəsi jurnalist fəaliyyətinin mahiyyətini və mənasını zəiflədən xəbər mesajlarının robotlaşdırılmasına və avtomatik yaradılmasına maneəyə çevrilir (bu, təhlükəlidir, məsələn, komponentlərin müəllifidir). Eyni zamanda, İnternetdə nəşrlərin janrının, üslubunun və dilinin seçimi nəşrin redaksiyasının məsuliyyətidir və mürtəcə siyasətin bir hissəsidir, lakin açıq İnternetdə redaksiya və redaktə həyata keçirilməsi birmənalı həll olunmur.

İnternetdəki istənilən nəşri kütləvi informasiya vasitələri, onun müəllifini isə jurnalist adlandırmaq olar. Müəllifin jurnalist layihələrində tam hüquqlu redaksiya işi haqqında danışmaq çətindir, burada müəllifin özü, öz saytında özünün və həmfikirələrinin nəşr siyasətini müəyyən edir.

Аннотация

Мультимедийность, объединяет разные модальности восприятия информации и способы регенерации смыслов в разных знаковых системах. Мультимедийная история в интернет-СМИ становится барьером на пути роботизации и автоматического генерирования новостных сообщений (чем опасен, например, компонентный авторинг), которые выхолащивают суть и смысл журналистской деятельности. При этом выбор жанра, стиля и языка публикаций в Интернет находится в зоне ответственности редакции издания и является частью реакционной политики, однако в открытом интер-

нете сам вопрос о наличии редакции и осуществления редактирования решается далеко не однозначно.

Любая публикация в интернете может быть отнесена к массовой информации, а ее автор может быть назван журналистом. Трудно также говорить о полноценной редакторской работе в авторских журналистских проектах, где сам автор на собственном сайте определяет политику публикаций, своих и своих единомышленников.

Keywords: Internet journalism, new media, authoring, multimedia, longread, storytelling

Açar sözlər: İnternet-jurnalistika, yeni media, avtorinq, multimedia hadisəsi, lonqrid, storitelling

Ключевые слова: Интернет-журналистика, новая медиа, авторинг, мультимедиа, лонгрид, сторителлинг

GİRİŞ. Məlum olduğu kimi, xəbər jurnalistikasının ən geniş yayılmış janrı şərhdır. O, hadisənin mahiyyətə qısa açıqlanması imkanlarını birləşdirir. Xəbər jurnalistikasının özünü isə bütövlükdə jurnalistikanın özü saymaq olar. Qeydin faktikilik imperativi jurnalist təcrübəsinə səlahiyyətli avtorinq texnologiyalarının tətbiqinin genişləndirilməsini, yəni kompüter sistemlərinin köməyi ilə - nə baş vermişdir?, harada?, nə vaxt? və kim iştirak etmişdir?- suallarına cavablar formalaşdırılmasının tələb olduğu qeydlər formalaşdırır. Jurnalistə (yaxud redaktora) yalnız toplanan faktlardan hansının açıqlanmağa layiq olduğunu, yəni gündəliyə uyğunluğunu müəyyənləşdirmək və onlardan günün ümumi mənzərəsini tərtib etmək qalır. Beləliklə, efiyə aşkar yalanların düşməsi risqi, həqiqətən, azalır. Əlbəttə, belə bir vəzifə əvvəldən qoyulursa.

Qeydin auditoriya üçün üstünlükləri göz önündədir: son zamanlar dəyişənlərlə tez və ətraflı tanışlıq. İnternet-jurnalistikada xəbər axınıni təkcə öz məqsədli auditoriyalarının deyil, istifadəçilərin fərdi profillərinə uyğun şəkildə qurmaq imkanları da yaranır. Başqa sözlə, hər kəs yalnız ona maraqlı olan informasiyanı izləmək imkanı qazanır. Bununla belə, informasiya qeydi qiymətləndirmə, münasibət, emosional aranjemandan və s. təmizlənmiş diskursiv praktika meydanında qalır. İnformasiya qeydinin üslubiyyəti açıqlamanın dəqiq, qısa və aydın olmasını tələb edir ki, bu, qərəzsizliyi, auditoriya tərəfindən birmənalı dekodlaşdırmanı təmin edir.

ƏSAS HİSSƏ. Lakin yeni texnoloji imkanlar informasiya qeydinə bütün bunları, o cümlədən analitikanı, dəyərləndirməni, balanslaşmanı, tövsiyə edilənliyi, proqnozlaşdırmanı mənimsəməyə imkan verir. Doğrudur, bu artıq heç də tam informasiya qeydi deyil, storitelling¹, lonqrid² və ya «multimedia hadisəsi» adlandırıla bilən hadisədir.

Başqa sözlə, informasiya qeydlərinin diskursiv çevrələrinə paradoksal şəkildə narrativ (təhkiyələr, hadisələr) daxil edilir. Həm də oxucuya seçim mikanı verilir: ya bir qayda olaraq, iri şriftlə fərqləndirilmiş əsas informativ məlumatları ötəri (diaqonal üzrə) nəzərdən keçirmək, ya da onun multimedia genişlənmələrinin öyrənilməsinə baş vurmaq. Beləliklə, istənilən xəbər istifadəçinin özü tərəfindən teleqraf lenti formatında sıxlaşdırıla, ya da tammetrajlı sənədli, yaxud bədii film miqyasına qədər genişləndirilə bilər. Hesab edilir ki, ilk multimedia hadisəsi The New York Times «Snow Fall» («Qar uçuşunu») komandasının 2012-ci ildə işıq üzü görən layihəsi olmuşdur. 16 xizəkçi Vaşinqton yaxınlığında Kaskad dağlarında qar uçuşuna düşmüş və bu hadisə haqqında nəşr fotoşəkillər, video və interaktiv qrafikadan istifadə etmişdi ki, bu, hadisənin uğurla qavranılmasına «iştirak effektinin» yaranmasını, yəni onun şəxsi olay kimi yaşanmasını əhəmiyyətli dərəcədə gücləndirmişdir.

A. Qradyuşkonun fikrincə, «vizual informasiya getdikcə daha çox yayılaraq müasir media sahəsində mətnin informasiyanı ötürmək üzərində monopoliyasını pozur».³ Multimedik hadisə jurnalistikanın ümumi prinsipini – hadisələrlə zənginliyin təmin edilməsini, baş verənlərlə əlaqəli olmasını gerçəkləşdirir, jurnalistikada auditoriyaya təsirin yeni yüksək texnologiyalı təsvir və ifadə vasitələri meydana çıxır. Bu zaman informasiya texnologiyaları xəbərlərin yeni jurnalist formalarının axtarışı təşəbbüsünü davam etdirir, jurnalist mətnində məzmun dəyişikliklərinə və janr palitrasının zənginləşməsinə əks təsir göstərir.

Multimedialılıq, məsələn, müxtəlif işarə sistemlərində informasiyanın qavranılmasının müxtəlif modallıqlarını və mənalarnın regenerasiyası üsullarını birləşdirir. İnternet-KİV-də multimedik hadisə xəbər məlumatlarının jurnalist fəaliyyətinin mahiyyəti və mənasını bayağılaşdırın robotlaşdırma və avtomatik qenerasiya qarşısında (məsələn, komponent avtorinqi bununla təhlükəlidir) maneəyə çevrilir. Bu zaman

İnternetdə nəşrlərin janrı, üslubu və dilinin seçilməsi həmin nəşri çap edən redaksiyanın məsuliyyət çevrəsinə aid olur və redaksiya siyasətinin bir hissəsinə çevrilir. Lakin açıq internetdə redaksiyanın mövcudluğu və redaktənin aparılması məsələsinin özü heç də birmənalı həll edilmir. İnternetdə istənilən nəşr kütləvi informasiyaya aid edilə, onun müəllifi isə jurnalist adlandırıla bilər.

Müəllifin özünün öz saytında şəxsi və həmfikirələrinə məxsus nəşrlərin siyasətini müəyyənləşdirmək, dolğun redaktor işindən danışmaq çətindir. Bəs, istənilən internet-nəşri kütləvi informasiya vasitələrinə aid etmək olarmı? Və ya online redaksiyanın mövcudluğu KİV-in imperatividir? Fikrimizcə, bu və ya digər internet-resursu KİV-lərə aid edərkən başqa meyarları əldə rəhbər tutmaq lazımdır. Oudur ki, şəbəkə KİV-ində redaksiyanın olması arzuədləndir, lakin heç də məcburi deyil. Redaksiyanın olmaması redaktor funksiyalarının icrası zərurətinin olmamasına dəlalət etmir. Onlar, sadəcə, müəlliflərin və ya nəşirlərin üzərinə qoyulur və virtual redaksiyanın funksiyaları da de-fakto saxlanılır.

Nəşriyyat sözlük-sorğu kitabında⁴ redaktə aşağıdakı kimi müəyyənləşdirilir:

1. Əsas məqsədi nəşr üçün nəzərdə tutulmuş əsərin təhlili əsasında onun ictimai dəyər dərəcəsinin, yəni məzmun və formasının ictimai, sosial-funksional təyinatına və oxucu ünvanına uyğunluq dərəcəsinin müəyyənləşdirilməsi olan proses.

2. Dövri və ya davamlı nəşrin hazırlanması və buraxılışına rəhbərlik.

Bu prosesin təşkilatçısı, əlaqələndiricisi kimi, redaksiya kütləvi informasiya fəaliyyətinin kommunikativ funksiyasının həyata keçirilməsini təmin edir. Bu prosesdə funksiyaların bir neçə əsas qrupu iştirak edərək qarşılıqlı şəkildə həyata keçirilərkən.

Birinci qrup funksiyalara analitik və bədii-publisistik jurnalistikaya məxsus xəbəri aid etmək olar. Funksiyaların ikinci qrupu redaksiya fəaliyyəti həddində, informasiyanın toplanması, seçimi, emalı, qruplaşdırılması, montajı proseslərində həyata keçirilir (elmi, ədəbi, bədii, texniki redaktə).

Təbii ki, bütün bunlar yalnız redaksiyaların fəaliyyətin müxtəlif sahələrinin informasiya mənbələri, bilik istehsalçısı və informasiya məhsullarının istehlakçıları qismində çıxış edən təmsilçiləri (oxucular, televiziya tamaşaçıları, radio dinləyiciləri və kütləvi informasiyanın başqa istifadəçiləri) ilə geniş əməkdaşlığı şəraitində mümkündür.

Üçüncü qrup redaksiyanın işinin təşkilini, onun menecment və marketinqini təmin edir.

Birgə yaradıcılıq fəaliyyətinin gedişində redaksiya çevrəsi idraki, dəyərləndirmə-yönləmə və təşkilati proseslərin bir çox iştirakçısını birləşdirir.

Bütövlükdə demək olar ki, redaksiya fəaliyyətinin obyektləri informasiya-kommunikasiya məhsullarıdır: biliklər, rəylər, praktik təcrübə, dəyər sistemləri, siyasi, iqtisadi və digər təşkilatların sənədləri və s. Bunlar informasiya məhsullarının – qəzet, jurnal, televiziya və radio verilişləri, kitab məhsulları, internet-saytlar və s. istehsalı üçün təməldir. Redaktənin elmi, ədəbi, bədii, texniki növləri fərqləndirilir. Redaktə həmçinin nəşrlərin, televiziya və radio proqramlarının, internet-nəşrlərin hazırlanması və buraxılışını da nəzərdə tutur.

Veb-səhifələmə və veb-masterinq redaktəyə aiddirmi?

Bir tərəfdən, informasiyanın dizayn və interaktiv elementlərini ehtiva edən veb-obrazı, əmin olduğumuz kimi, kontentin önəmli tərkib hissəsidir, yəni nəşrin anlamına önəmli təsir göstərir və deməli, onun formalaşdırılması elmi və ya ədəbi redaktorun səlahiyyətinə aiddir. Digər tərəfdən, bu elə bədii və texniki redaktorların məsuliyyət dairəsidir. Üçüncü tərəfdən, veb özünəməxsus özəlliyə malikdir. Beləliklə, de-fakto redaktənin daha bir növü meydana çıxır: veb-redaktə. Veb-səhifələrin çapa hazırlanması üzrə əsas funksiyalar da elə onun üzərinə qoyulacaqdır.

İnternetin meydana çıxması ilə bunu aşağıdakı şərhələrlə tamamlamaq lazımdır.

1. Kütləvi informasiyanın istehsalı artıq müstəsna olaraq peşəkar jurnalist birliyinin hüququ deyil.

2. Kütləvi informasiya ikikomponentli törəmə kimi meydana çıxır: 1) informativ yayım komponenti; 2) kommunikasiya komponenti. Deməli, kütləvi informasiya kütləvi kommunikasiya kateqoriyasına keçir.

3. Xəbərlər hipermetn strukturu kəsb edir. Xəbər gerçəkliyin əksi olduğundan, KİV-lər hipermetn gerçəkliyin poliontoloji mahiyyətini görməyə yardımçı olur. Bu zaman onlar özləri də təbiəti etibarilə hipertmətni olan kütləvi kommunikasiya sistemində çevrilir.

Kütləvi kommunikasiya sistemində redaksiya yarım sistemlərini fərqləndirmək mümkündür: qəzet, jurnal, kitab, radioyayım, teeviziya və internet redaktə sistemi. Veb-redaktə sisteminin funksiyası hipertmətn informasiya resursları yaratmaq, dəstəkləmək və onları yeniləməklə onların başqa resurslar və onların istehlakçıları ilə əlaqələrini telekommunikasiya texnologiyalarının müasir səviyyəsinə istiqamətlənməklə təmin etməkdir.

Veb-nəşrin vəzifələrindən asılı olaraq, veb-redaksiya muxtar qurum və ya mediaholdingin yarımstrukturu ola bilər. Məsələn, adi qəzetin vəzifəsi nəşr olunan materialların kalkalaşdırılması ilə məhdudlaşan veb-saytının bu şəkildə işləməsi mümkündür. Redaksiya üçün ənənəvi mütəxəssislərdən başqa, veb-saytın qərargahı veb-dizayn sahəsində mütəxəssislər, proqramçılar (veb-proqramlaşdırma dilləri və məlumat bazaları ilə işlə tanış olan), saytın informasiya təhlükəsizliyini təmin edən əməkdaşlarla, saytın təbliğinin həvalə edildiyi əməkdaşlarla, saytın ziyarətçiləri ilə yazışmaya məsul olan əməkdaşlarla, texniki dəstək xidməti əməkdaşları ilə, saytın daimi ziyarətçiləri ilə (jurnalistlər və oxuyucular) və s-lə təmin edilir. Baş redaktordan başqa, resurslardan istifadəyə resursun işinin iş qabiliyyətli olmasını və texnoloji xarakteristikalarının müvafiqliyini təmin edən administratoru da cavabdehdir.

NƏTİCƏ. Beləliklə, redaksiyalarda (yalnız veb-nəşrlərin deyil) tamamilə yeni mütəxəssislərə tələbat yaranır. Belə ki, məsələn, "Center for Sustainable Journalism" qeyri-kommersiya təşkilatının fikrincə, ən yaxın vaxtlarda istənilən KİV-in peşə landşaftı aşağıdakı mütəxəssislərlə tamamlanacaq:

1. Başlıq optimallaşdırıcısı. Axtarış sistemlərində trafik artırmaq üçün məqalələrin başlıqlarının onlara uyğunlaşdırılması.
2. Social Media Reporter / Aggregator – sosial media redaktoru, yəni sosial mediada informasiya toplanması və faktların yoxlanılması.
3. Story Scientist – kontent araşdırıcısı, yəni sosial şəbəkələrdə istifadəçilərin davranışının öyrənilməsi və bunun əsasında tematika və format üzrə tövsiyələrin həyata keçirilməsi.
4. Data Detective – infoqrafika redaktoru. Statistik məlumatlar axtarışı və oxunaqlı formaya salınması.
5. Curator in Chief – baş mühafiz. Saytın Curator in Chief-i mənbələr üzrə informasiya toplanması və onun saxlanması prosedurlarının düzgünlüyünə cavabdehdir.
6. Explanatory Journalist – populyarlaşdırıcı jurnalist istehlakçıların suallarını cavablandırır, xüsusən, KİV-lər 24/7 rejimində işlədiyi hallarda.
7. Viral Meme Checker / Viral Video Maker – virus marketinqi mütəxəssisi. Bu insanlar sahibkarın səhifələrində «əhəmiyyətsiz» xəbərlərin yer almamasına nəzarət edir və sosial şəbəkələrdə və bloqlarda heç də aşağı olmayan sürətlə yayılan kontent yaradırlar.
8. Slideshow Specialist – vizual-dinamik sıraya görə məsul olan slayd-şou üzrə mütəxəssis.
9. Networker / Engager – mülki jurnalistika üzrə mütəxəssis böyük sayda istifadəçi və blogerin cəlb edilməsinə hesablanan mediakampaniyaları dəstəkləyir, məsələn, «Vedomosti» ilə «Serebryaniy dojd»un («Gümüş yağış») «Sayrışan işıqlar ovu» layihəsi kimi.
10. E-Book Creator – elektron kitab yarıdıcısı. Bu peşənin fərqləndirilməsi Qərbdə artıq fəal şəkildə təzahür edən meyli – elektron kitabdən öz kontenin satış kanalı qismində istifadəni əks etdirir.
11. Web Developer – veb-qurucular.

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Philosophical sciences

KANSO (簡素) AS A EXPRESSION OF AESTHETIC REALISM IN ZEN-BUDDHIST CULTURE

Anatolii Meleshchuk

Ph.D. in Philosophy, Assistant Professor of Philosophy Science
Oles Gonchar Dnepropetrovsk National University

КАНСО (簡素) ЯК ВИРАЗ ЕСТЕТИЧНОГО РЕАЛІЗМУ В ДЗЕН-БУДДИСТСЬКІЙ КУЛЬТУРІ

Мелешчук Анатолій Анатолійович

кандидат філософських наук, доцент кафедри філософії
Дніпровського національного університету ім. Олеса Гончара

Актуальність

Простота є однією з ключових естетичних категорій, яка пронизує дзен-буддистську культуру, впливаючи на її філософські й мистецькі аспекти. Особливе місце серед естетичних принципів дзен посідає концепція кансо (簡素), що перекладається як «простота» або «лаконічність». Ця категорія не лише формує стиль і характер дзен-мистецтва, а й глибоко вкорінена в світоглядній системі дзен-буддизму, яка акцентує увагу на гармонії, природності та відкиданні зайвого.

Кансо втілює ідеал мінімалізму, що є органічним продовженням дзен-буддистського розуміння реальності: бачити речі такими, якими вони є, без прикрас і ілюзій. Цей принцип знаходить своє вираження в багатьох культурних і художніх практиках – від архітектури й садового мистецтва до поезії та чайної церемонії. Усі ці сфери ілюструють, як простота може бути не лише естетично привабливою, але й наповненою глибоким духовним змістом.

Мета цього дослідження – дослідити кансо як вираз естетичного реалізму в дзен-буддистській культурі, розкрити його філософське підґрунтя, прояви в різних мистецьких формах і культурних практиках, а також показати його актуальність для сучасної естетики. Зокрема, буде приділено увагу тому, як кансо гармонійно поєднує простоту з глибиною, пропонуючи альтернативу перенасиченості й штучності сучасного світу.

Таким чином, дослідження категорії кансо дозволяє не лише глибше зрозуміти дзен-буддистську культуру, але й переосмислити роль простоти в нашому житті, сприяючи формуванню естетичного і світоглядного підходу, заснованого на цінностях гармонії, природності й стійкості.

Філософське підґрунтя кансо в дзен-буддизмі

Простота, або кансо (簡素), є фундаментальною естетичною категорією в дзен-буддизмі, яка втілює ідею природності, ясності та відсутності надмірності. Вона тісно пов'язана з дзен-буддистським прагненням до внутрішнього спокою та гармонії з навколишнім світом. Простота в цьому контексті не є лише естетичним ідеалом, але й способом мислення, що виявляє сутність речей через звільнення від зайвого та ілюзорного.

На думку дослідника естетики дзен-буддизму Дайсецу Судзукі, простота є невід'ємною частиною дзенської практики [1]. Судзукі зазначає, що дзен спрямовує людину на безпосереднє переживання реальності, відкидаючи теоретичні конструкції та надлишкову символіку. У своєму дослідженні він наголошує, що естетична простота дзен є не лише зовнішньою рисою, але й відображенням внутрішнього стану просвітлення – саторі. Простота, згідно із Судзукі, допомагає відчутти гармонію між людиною та природою, де кожна деталь є водночас скромною й досконалою.

Інший дослідник, Грем Паркс, аналізує простоту як категорію, що має моральний і філософський вимір. Він вказує, що кансо є основою для розвитку цінностей самодисципліни й поміркованості, що в дзен-буддизмі тісно пов'язані з практикою медитації. У своїх працях Паркс підкреслює, що кансо передбачає не лише уникнення надмірності, але й уважне ставлення до кожного елементу, яке втілюється в понятті «мистецтва малого» [6].

Згідно з дослідженнями Юсі Ії, поняття простоти має тісний зв'язок із іншими дзен-буддистськими категоріями, такими як вабі (侘び, скромна краса) та сабі (寂び, чарівність

старіння) [9]. Він вказує, що ці категорії доповнюють одна одну, створюючи унікальну естетику, яка прагне передати відчуття спокою, невимушеності та гармонії. Простота, на його думку, відображає не лише зовнішню естетику, а й внутрішню готовність прийняти речі такими, якими вони є, без прагнення їх змінити або прикрасити.

Загалом, простота як категорія в дзен-буддизмі є багатограним феноменом, що інтегрує естетичний, етичний і філософський виміри. Її сутність полягає не лише у відмові від надмірності, але й у здатності через лаконічність виявити глибинний зв'язок між людиною, природою та абсолютною реальністю. Такий підхід дозволяє зрозуміти простоту як спосіб досягнення просвітлення і одночасно як естетичний принцип, що пронизує всі аспекти дзен-буддистської культури.

Принцип кансо (簡素), що втілює ідею простоти, має глибокий зв'язок із дзен-буддистським розумінням реальності. У дзені реальність сприймається не як об'єкт для аналізу чи маніпуляцій, а як досвід безпосереднього існування, який можна відчутти лише через очищення свідомості від ілюзій. У цьому контексті кансо виконує роль провідника до досягнення істинної природи буття, що в дзен-буддизмі позначається як «такість» (татхата).

Філософ Дайсецу Судзукі у своїх роботах пояснює, що дзен-буддистська простота пов'язана з ідеєю порожнечі (шуньята), яка не є ні відсутністю, ні небуттям, а радше потенціалом для прояву будь-якої форми [1]. На його думку, кансо не означає лише мінімалізм у формі чи змісті, але також звільнення свідомості від концептуальних обмежень [1]. Простота в дзені є відмовою від зайвих нашарувань, які заважають бачити речі такими, якими вони є.

Згідно з працею Масао Абе, філософія дзен зосереджується на усвідомленні реальності через прямий досвід [3]. Кансо стає інструментом цього усвідомлення, оскільки через простоту людина позбавляється від відволікаючих елементів, зосереджуючись на сутності. Абе вказує, що такий підхід знаходить своє відображення як у мистецтві, так і в духовних практиках, де кожен елемент має значення, і ніщо не є випадковим.

Грем Паркс підкреслює, що кансо є способом побудови гармонійного зв'язку між людиною і природою [6]. У його дослідженнях простота описується як форма взаємодії з реальністю без домінування над нею. Він відзначає, що у дзені реальність є тим, що людина може сприйняти через усвідомлення моменту «тут і зараз» [6]. Кансо, у цьому контексті, є відображенням такого усвідомлення: лаконічність і мінімалізм створюють простір для глибшого досвіду.

Філософ і естетик Мірча Еліаде також звертається до питання простоти, хоча й не безпосередньо в контексті дзен [2]. У його праці про сакральність і профанність він зазначає, що відмова від зайвого та очищення сприйняття відкривають шлях до переживання священного у звичайному. Ця думка резонує з кансо, де звичайні речі, очищені від надмірності, виявляють свою глибинну сутність і взаємозв'язок із реальністю.

Таким чином, зв'язок кансо з дзен-буддистською філософією реальності полягає в тому, що простота допомагає розкрити суть речей, звільняючи свідомість від нашарувань ілюзій. Через принцип кансо дзен наголошує на важливості прямого переживання реальності, де кожен момент є досконалим у своїй природній простоті.

Кансо в естетичних практиках дзен-буддистської культури

Принцип кансо (簡素), що виражає ідеал простоти та лаконічності, є основою багатьох естетичних практик дзен-буддистської культури. Ця концепція, сформована під впливом філософії дзен, пронизує різні мистецькі та ремісничі традиції, зберігаючи гармонійний зв'язок між формою, змістом і духовним значенням.

Простота як естетичний і філософський принцип знаходить своє найяскравіше втілення в архітектурі дзенських монастирів і садах. Дзенські сади, такі як знаменитий сад Рьоандзі в Кіото, ідеально демонструють кансо через використання мінімальної кількості елементів: каменів, піску та моху. Як зазначає дослідник японської культури Янг Цзян, у цих садах простота несе символічне навантаження, створюючи простір для медитації й духовного споглядання [8]. Уникаючи декоративності, сад акцентує увагу на природності та природній гармонії.

В архітектурі дзен-буддистських храмів також реалізується принцип кансо. Простота форм, використання природних матеріалів (дерева, бамбука, каменю) та мінімальне оздоблення підкреслюють гармонію між спорудою та навколишнім середовищем. Як зауважує Янагі С., така архітектура створює простір, який сприяє внутрішньому спокою й концентрації, допомагаючи людині зануритися в духовну практику [7].

Простота виявляється також у дзенському живопису та ремеслах. У жанрі суйбокуґа (水墨画, монохромний живопис) використовується мінімум засобів – чорнило й вода. Як відзначає Окакура Какузо, у цій техніці важливим є не лише те, що зображено, а й те, що залишається невимовленим – порожнеча як частина композиції [5]. Лаконічність зображень несе емоційну та духовну наповненість, дозволяючи глядачеві «додумувати» зображене.

У ремеслах, таких як кераміка, принцип кансо також набуває особливого значення. Гончарні вироби, зокрема чаші для чайної церемонії, створюються з акцентом на природні форми та текстури, уникаючи надмірної симетрії чи прикрас. Як пише Дайсецу Судзукі, простота цих виробів відображає ідею прийняття недосконалості, що перегукується з концепцією вабі-сабі [1].

Література дзен-буддизму також спирається на принцип простоти. Поезія хайку, з її суворим форматом і мінімальною кількістю слів, є прикладом кансо у словесній творчості. Як зазначає Масао Абе, хайку відображають суть моменту через лаконічність, залишаючи простір для роздумів і емоцій [3].

Інший літературний жанр, дзуйхіцу (随筆, есе), також відображає принцип кансо через вільну та невимушену структуру. Відомі твори, такі як «Записки в узголів'ї» Сей Сьонаґон, ілюструють, як простота викладу та фрагментарність думок можуть передати складність внутрішнього світу автора [4].

Кансо в естетичних практиках дзен-буддистської культури – це не просто прагнення до мінімалізму, але й спосіб виявлення сутності через звільнення від зайвого. Ця концепція, інтегрована в архітектуру, садове мистецтво, живопис, ремесла та літературу, підкреслює гармонійний зв'язок між естетичним і духовним вимірами. Простота як категорія дзен-буддизму продовжує впливати на сучасну культуру, демонструючи свою універсальність і актуальність.

Висновки

Отже, принцип кансо (簡素), який у дзен-буддизмі символізує простоту, є не лише естетичним ідеалом, але й глибокою філософською категорією, що відображає спосіб сприйняття реальності. У його основі лежить прагнення до очищення форми й думки, яке дозволяє досягти безпосереднього зв'язку з сутністю речей. У дзен-буддистській культурі кансо виступає як ключовий вираз естетичного реалізму, акцентуючи увагу на природності, ясності й гармонії.

Дослідження кансо демонструє, що простота в дзен не є відмовою від глибини чи складності, а навпаки, дозволяє через мінімалізм та лаконічність розкрити багатогранність і повноту реальності. Цей принцип знаходить своє втілення в різних аспектах культури. В архітектурі та садовому мистецтві, де через мінімум елементів створюється простір для духовного споглядання. У живописі й ремеслах, які через недосконалість і природність форм передають ідею гармонії. У літературі, де лаконічність слів відкриває простір для глибоких роздумів.

Актуальність принципу кансо виходить далеко за межі дзен-буддистської культури. У сучасному світі, переповненому інформаційним шумом і матеріальним надлишком, цей принцип пропонує альтернативний підхід до життя, заснований на зменшенні, увазі до суттєвого й пошуку внутрішньої рівноваги.

Таким чином, кансо як вираз естетичного реалізму не лише допомагає зрозуміти дзен-буддистську культуру, але й відкриває можливості для осмислення універсальних цінностей, що здатні сприяти гармонізації відносин між людиною, природою та суспільством.

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Technical sciences

APPLICATION OF INFORMATION TECHNOLOGIES FOR THE DESIGN OF LAND AND PROPERTY COMPLEX

Nelin Yevhen Oleksandrovych

Postgraduate student of the

Department of Land Administration and Geographic Information Systems

Kharkiv National University of Urban Economy

O.M. Beketov National University of Urban Economy. Kharkiv, Ukraine

Kasyanov Volodymyr Volodymyrovych

Associate Professor of the Department of Land Administration and Geoinformation Systems

Kharkiv National University of Urban Economy

O.M. Beketov Kharkiv National University of Urban Economy. Kharkiv, Ukraine

ЗАСТОСУВАННЯ ІНФОРМАЦІЙНИХ ТЕХНОЛОГІЙ ДЛЯ ПРОЕКТУВАННЯ ЗЕМЕЛЬНО-МАЙНОВОГО КОМПЛЕКСУ

Нелін Євген Олександрович

аспірант кафедри земельного адміністрування та геоінформаційних систем

Харківського національного університету міського господарства

імені О. М. Бекетова. Харків, Україна

Касьянов Володимир Володимирович

доцент кафедри земельного адміністрування та геоінформаційних систем

Харківського національного університету міського господарства

імені О. М. Бекетова. м. Харків, Україна

Abstracts

The main aspects of the use of information technologies for the design of land and property complex are considered in these theses. Modern methods of digital modelling, geographic information systems and process automation in this area are described. The advantages of using information technologies in the context of increasing the accuracy, efficiency and transparency of design work are considered.

Анотація

У даних тезах розглядаються основні аспекти застосування інформаційних технологій для проектування земельно-майнового комплексу. Описано сучасні методи цифрового моделювання, геоінформаційних систем та автоматизації процесів у цій галузі. Розглянуто переваги використання інформаційних технологій у контексті підвищення точності, ефективності та прозорості проектних робіт.

Keywords: information technology, design, land and property complex, geographic information systems, digital modelling.

Ключові слова: інформаційні технології, проектування, земельно-майновий комплекс, геоінформаційні системи, цифрове моделювання.

Вступ. Проектування земельно-майнового комплексу є складним завданням, що включає аналіз топографічних, правових та економічних аспектів території. Інформаційні технології відкривають нові можливості для інтеграції різноманітних даних та автоматизації процесів проектування. Їх використання дозволяє забезпечити більш ефективне планування та управління земельними ресурсами.

Матеріали та методи. Дослідження ґрунтується на застосуванні геоінформаційних систем (ГІС), цифрового моделювання територій та автоматизованих систем проектування (САПР). Використовувались інструменти обробки даних дистанційного зондування, лазерного сканування та безпілотних літальних апаратів (БПЛА). Обробка даних здійснювалася з використанням програмного забезпечення ArcGIS, AutoCAD Civil 3D та QGIS.

Результати. Застосування інформаційних технологій дозволило:

Створити інтегровані моделі земельно-майнового комплексу з врахуванням просторових і правових даних.

Автоматизувати процеси аналізу земельних ресурсів та складання проектної документації.

Підвищити точність оцінки територій та ефективність управління ресурсами.

Отримані результати демонструють потенціал технологій у забезпеченні прозорості та об'єктивності прийняття рішень у проектуванні.

Висновки. Інформаційні технології значно підвищують ефективність проектування земельно-майнових комплексів. Подальші дослідження повинні бути спрямовані на удосконалення методів обробки даних, розширення інтеграції з іншими системами управління територіями та впровадження технологій штучного інтелекту для автоматизації складних аналітичних завдань.

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