XIV Международная ежегодная научная конференция

# New Horizons of Economic Growth # Social Wellbeing # Cultural Achievements

СБОРНИК СТАТЕЙ

Экономический факультет МГУ имени М.В. Ломоносова

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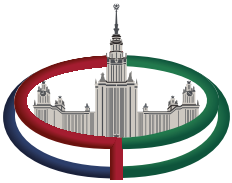

# XIV Международная студенческая научно-практическая конференция New Horizons of Economic Growth# Social Wellbeing # Cultural Achievements

Под редакцией
Л. В. Кулик

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В настоящем сборнике собраны статьи, представленные студентами, магистрантами и аспирантами на XIV Международной конференции 2025 года — "New Horizons of Economic Growth # Social Wellbeing # Cultural Achievements" — и рекомендованные к публикации экспертным сообществом. В конференции по актуальным вопросам экономики и управления на английском языке, ежегодно проводимой экономическим факультетом МГУ имени М. В. Ломоносова, принимают участие не только представители вузов России, но и зарубежных университетов.

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# Contents

# Employing neural networks in teaching and learning foreign languages

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**Abstract.** Modern technologies, particularly neural network models, are actively transforming the process of teaching and learning foreign languages. Artificial intelligence enables personalized learning by adapting materials to students' levels and needs while providing instant feedback. Neural networks are used to develop interactive chatbots, automate essay grading, generate exercises, and simulate real-life communication. However, their implementation faces challenges, such as limited contextual understanding and ethical concerns. The article analyzes the key advantages and disadvantages of using neural networks in language education, as well as prospects for their further development.

**Keywords:** Artificial Intelligence, neural networks, education, learning, teaching, foreign languages

## Introduction

Artificial Intelligence (AI) has proven to significantly enhance language education by providing continuous, adaptive support to learners. Research highlights several key advantages of AI-driven language learning systems, including:

- Self-paced learning: Students can progress through material according to their individual needs and speed.
- Real-time feedback: Immediate corrections and suggestions help learners refine their skills without delays.

- Autonomous guidance: AI tools reduce dependence on constant teacher supervision, enabling independent study.

Some studies suggest that these features make AI an effective supplement to traditional language instruction, particularly for personalized and flexible learning experiences [Arani, 2024] & [Seddik, 2024].

While AI offers significant benefits in language education, research has identified several notable limitations affecting both learners and educators. A primary concern is the development of overreliance among students on AI-assisted learning tools [Seddik, 2024]. Additionally, current neural network technologies demonstrate limited effectiveness in processing and generating sophisticated texts, as they lack complete contextual understanding. Scholarly discussions have further highlighted ethical considerations, particularly regarding data privacy violations through improper handling of sensitive user information, along with broader socioeconomic implications stemming from AI's potential disruption of employment sectors within education [Rebolledo Font de la Vall & Gonzalez, 2023].

## Research

Artificial intelligence and neural networks are revolutionizing language education by enabling customized learning experiences, real-time personalized feedback, efficient assessment generation, and performance prediction. A 2025 Egyptian study compared two groups of learners: one using conventional teaching methods and the other utilizing AI-based tools such as ChatGPT, Grammarly, and Duolingo (which employs AI for dynamic content creation). The research highlights ChatGPT's superior performance, given its advanced capabilities compared to traditional AI systems.

The study revealed that learners using AI tools outperformed their peers in traditional instruction. Key benefits included:

- Enhanced engagement: AI's interactive nature increased motivation (e.g., one learner likened ChatGPT to a "game-like" experience).
- Adaptive learning: Tools dynamically adjusted content to individual proficiency levels (e.g., Duolingo's targeted exercises).

Critiques of this new method centered on overreliance (e.g., Grammarly dependency hindering autonomous writing) and limited conversational practice. While AI-driven methods statistically outperform traditional approaches [Seddik, 2024, p.6], scholars caution that unchecked use may impair independent language acquisition. A hybrid model balancing AI and human instruction is recommended to maximize benefits while mitigating risks [Arani, 2024, p.9].

To support the critical viewpoint it should be added that, though current research acknowledges that while AI demonstrates considerable potential in language learning, several critical ethical concerns remain unresolved. These include the inherent limitations of AI in replicating human cognitive processes and the pressing need for further investigation into integrating conventional pedagogical approaches with emerging technologies [Kukulska-Hulme & Lee, 2020, p.3].

A paramount issue involves data privacy considerations, particularly given the extensive personal information collected by AI systems. Such datasets encompass not only learners' private details but also their study patterns and academic performance metrics, necessitating robust safeguards to ensure information security [Hockly, 2023, p.5].

Furthermore, despite continuous advancements in AI capabilities, these systems remain incapable of fully replicating the holistic and intuitive nature of human instruction. Human educators possess unique advantages in conveying nuanced cultural contexts, establishing emotional connections with students, and demonstrating adaptive empathy — qualities that current technology cannot authentically reproduce [Rebolledo Font de la Vall & Gonzalez, 2023]. While AI tools serve as valuable complements to traditional teaching by providing customized learning pathways and immediate feedback, their potential to completely replace human educators remains both technically and philosophically questionable.

However, an emerging scholarly perspective suggests that an effective synthesis of conventional teaching methodologies and AI-assisted instruction has already begun to materialize. This hybrid approach is projected to gain increasing prominence in language education, representing what some researchers view as an optimal balance between technological innovation and human-centered pedagogy [Nurkhamimi, 2024, p.6].

## Conclusion

Research substantiates the significant potential of AI and neural networks in language education, particularly through personalized learning, immediate feedback, and enhanced student engagement. Empirical evidence indicates superior learning outcomes with AI-assisted instruction compared to conventional methods. Nevertheless, three critical challenges emerge: data privacy issues, unequal access to necessary technologies, and AI's current limitations in replicating the nuanced aspects of human educational interaction.

The emerging consensus in educational research favors a synergistic approach rather than substitution. In this integrated model, AI assumes responsibility for adaptive and administrative functions, while human educators concentrate on developing higher-order skills including critical analysis, cultural competency, and emotional intelligence. This paradigm necessitates the development of robust collaboration frameworks between AI systems and teachers, implementation of rigorous ethical protections, and measures to ensure equitable technological access.

This strategic integration of neural network technologies with traditional pedagogical approaches promises to yield a more adaptable, inclusive, and effective language education framework. Such a system would be better equipped to address the diverse needs of 21st century learners while maintaining the essential human elements of education. Future developments should focus on optimizing this human-AI partnership while addressing the identified challenges of ethics, accessibility, and pedagogical balance.

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# Russia's Development Strategies: A New Perspective

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**Abstract**: This paper examines the current state, history and prospects for Russia's automotive industry under the sanctions imposed by the countries of the collective West in 2022. The short one analysis about size and structure of the car passenger vehicle fleet, the dynamics of sales, production and imports of passenger cars are considered. The reaction of international automotive holdings and their actions to leave the Russian market due to sanctions pressure or on other hand their actions to impact in our economy. The author's thoughts about new Strategy for the Development of the Automotive Industry until 2035; some decisions about current problems is noted.

**Keywords:** Russia's automotive industry; sanctions; structure of the car passenger vehicle fleet.

## Introduction

Being one of the most important industries, mechanical engineering, continues to develop in our country, but the background and, moreover, the prospects for the development of such a large industry are extremely difficult. Even today, products in this category stay a significant part of import. This theme is really important because of constantly changing situation on Russian`s market of passenger cars.

## Essence of Russian passenger car manufacturing industry

It is important to start analyzing this example from 1991– which was not the easiest time for our country in economic terms. At the same time, politics of those times were applied to have a free trade politic to the import of cars. The volume of imports that year, which increased almost 100 times, can be characterized by allowing each individual to import a passenger car duty-free into the country. The customs duty was imposed only if the car was sold within 2 years of using after being imported into the customs territory of the country [Internet, date of application: 02.03.2025].


*Figure 1.* Sales of new cars in Russian Federation 2021-2023 years [Internet, date of application: 02.03.2025]

Within a year, this reform had become a real threat to domestic enterprises in the production sphere of passengers` cars. The Government of the Russian Federation has taken measures aimed at protecting production facilities in 1992. The previous order of the USSR Customs Committee was abolished, and in 1993 the import duty was increased [Internet, date of application: 02.03.2025].

However, the protectionist policy was seriously suppressed due to Russia's entry into the Customs Union in 1995. This fact forced the Government of the Russian Federation to significantly reduce the duty rate, due to the alignment of the rates with the participating countries (Belarus and Kazakhstan).

In 1996, the Government again went to a meeting with foreign participants of foreign economic activity, introducing a privilege for

the import of foreign cars for diplomats, sailors, pilots, etc. However, in the noughties (2000) This privilege was canceled due to an excessively large proportion of imported cars into our country with the help of this privilege.

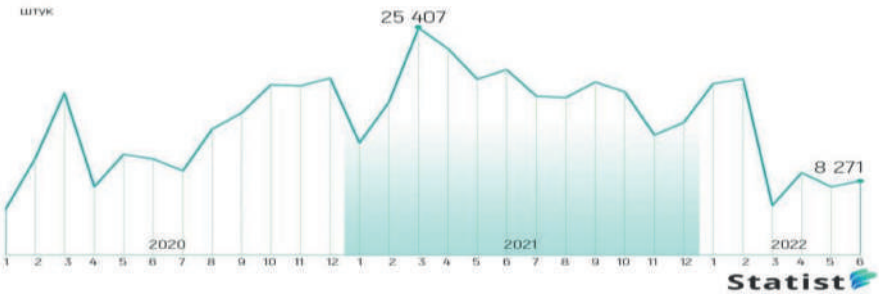


*Figure 2.* Dynamics of passenger car imports in Russia from 2020 to 2022 [Internet, date of application 02.03.2025].

Also, the Government of our state has been actively fighting with the "junk dump" in our country since 2002, introducing increased duties on the import of used cars [Internet, date of application: 02.03.2025]. Even nowadays, the government continues to actively fight this problem by maximizing the import rates of imported used cars.

To summarize, it is important to say that in the twenty-first century, including 2021, as noted in the diagrams above, imported passenger cars are still being imported into our country.

In the chart number 1, we can note a sharp drop in import volumes in March 2022. However, this is not related to changes in customs duties, as there are consequences of the sanctions imposed by the EU. Even with such sanctions, a sharp increase is visible in the form of a market recovery in April of the same year. Of course, the market has not fully recovered, but taking this trend into account, it can be assumed that customs and tariff regulation as a whole may not help much in supporting the competitiveness of Russian enterprises focused on the production of automobiles. This is probably due to the low interest in this product in both the domestic and foreign markets. Experts identify the following reasons: the instability of the Russian economy makes long-term investments in enterprises extremely problematic for enterprises in almost any sector of the economy, our one [Internet, date of application: 02.03.2025]

Thus, experts underline that without the proper, already existing support from customs and tariff regulation, this sector of the domestic economy would be in a much more deplorable state.

In addition to the above, another example used in support of the domestic automotive industry is «utilsbor». So, among the large list of persons who are required to pay this tax, in the framework of this work, we are interested in those who import vehicles into the territory of the Russian Federation from abroad. So the payment is calculated depending on a variety of coefficients, among which: the "novelty" of the vehicle, if more than 3 years have passed since the release date, the coefficients will be strikingly different, the type of engine – electric, hybrid or internal combustion, the type of vehicle, because in addition to passenger cars, this tax is charged for the import of trailers, saddles tractors and so on, as well as depending on the person importing this product into the territory of the Russian Federation, for example, this person may be an individual and import it for personal use.

## Theoretical aspects of nowadays Russian passenger car manufacturing industry

Nowadays, a huge number of passenger cars were imported from China by 31% more than in the previous year. This threatens the development of the domestic automaker. Let`s compare situation on these markets on two diagrams – of 2022 and 2023 years.


*Figure 3*. Market shares by brands in 2022 and 2023 [Internet, date of application: 02.03.2025]

However, the government has a plan, or rather a strategy for the development of the industry, calculated until 2035. The document includes an assessment of the current state of the industry, defines

the direction of its development, formulates goals, priorities and key performance indicators. The assessment of the development of the global automotive industry, including current global trends, is also given.

In addition, due to the departure of some brands outside the Russian Federation, there are examples when factories abandoned by these companies are sold to the domestic «Avtovaz» company.

## Conclusion

To summarize, we can say that the state implements many measures to support the domestic automaker in the field of foreign economic activity, however, there are many measures implemented within the state – investment in industry, for example, to stimulate demand, or subsidize R &D, to support the technological development of this industry.

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# Strategic and Methodological Transformational Contours of Regionalizing Climate Policy in Russia

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**Abstract**. The input-output method is the basic method in the Low-Carbon Development Strategy of the Russian Economy. The Strategy defines an intersectoral strategic outline across the entire hierarchy of government. The Strategy and Concept of Scientific and Technological Development ensure the technological sovereignty for achieve sustainable development goals. In addition, the major innovative project of state importance (MIP SI) determines the interaction of federal governments and research centers to aggregate the achievements in environmental for the climate policy. Overall, the "scaling" the input-output method from the country to the regional level and intersectoral strategic contour contribute for implement strategic planning by local government officials in the Russian economy to shed light on climate policy on the regional scale.

**Keywords:** climate policy, strategic planning, decarbonization, energy transition, spatial development.

## Introduction

The second half of the XX century is the time of the different scientific discoveries, which contribute to the technological development of the economies of countries. However, the active integration of scientific achievements into industry generates negative effects around the world. In this fact, Aurelio Peccei (manager of "FIAT" and vice-president of "Olivetti") and Alexander King (OECD Director-General for Science) organized meetings with scientists and government officials to

emphasize on global problem, and faced different reactions on their initiative, from support to harmfulness of these ideas. In this regard, A. King and A. Peccei realized the need of the modeling of the impact of the global problem and asked J. Forrester to create a model of the system dynamics of the world, which allowed to make appropriate assessments [King, 1979, pp. 54-64].

Thus, this system dynamics model ("World-3") is basic in "The Limit to Growth" – the first report of the Club of Rome [Meadows, 1972, 205 p]. Club is not political and consist of one hundred of people, which conduct and demonstrate the expert assessments to inform the governments about the global challenges for take into account in the economic policy. The mathematical instrument of the first report demonstrates the modelling of the material flows such as (1) changes in resource volume, (2) volume of pollution, (3) population size, (4) changes in industrial and (5) agricultural production capacity.

The wide publicity shedded light on these problems and created a "pulse" for using various mathematical tools to analyze dynamics of different economic region at that time [Castro, Jacovkis, 2015, pp. 1-17; Cole, 1987 pp. 403-430; Hughes, 1985, pp. 77-101]. One of these reports is "The future of the world economy", which based on input-output model [Leontief, 1977, 110 p]. V. Leontief created this tool and received the Nobel Prize in 1973 of this creation.

## Global modelling: USSR's and Russia's experience

Academician of the USSR Academy of Sciences D.M. Gvishiani founded All-Union Scientific Research Institute for Systems Research in 1976, and the employees prepared a report based on long-term modeling (up to 2030), which presented scenarios for the development of the domestic economy [Gelovani, 2009, 320 p.]. J. Forrester visited this scientific center in the last century, this fact demonstrates which shows that the international scientific community was very interested in cooperation with Soviet scientists. Nowadays, after the collapse of Soviet Union, research of the global modelling continues in Russia, and the result, experts from Lomonosov Moscow State University rethought negative results of the first report of Club of Rome, and demonstrated the usage of the additional components of the system dynamics model, which shows the modelling social relationships. The results of this modelling experts submitted to the Club of Rome in 2022 their report entitled "Reconsidering the Limits to Growth" [Sadovnichy et. al., 2023, 540 p].

This research demonstrates, that depopulation is a main problem instead of population growth, world system shows global phase transition, the problem of the global warning resolved by modern technologies, optimization of resource consumption, the cybernetic revolution shifted the focus to the biological age of the population. The developed countries should help underdeveloped countries in order to ensure sustainable development against the background of socio-economic processes, and the construction of the new society is necessary during transition [Sadovnichy et. al., 2023, p. 533-537].

## Climate policy of the Russian economy: legacy balance calculations and strategic planning

The one of the global problem is a climate change, and government introduces different measures to ensure the country's economic growth, taking into account decarbonization. Due to the legacy in strategy planning of the Soviet Union, Russia's government often accept the document of the planning tools according to federal law on strategic planning [Federal'nyj zakon ot 28 ijunja 2014 g. N 172-FZ ]. As the result, Low-Carbon Development Strategy [Rasporjazhenie Pravitel'stva RF ot 29 oktjabrja 2021 g. № 3052-r] contains the calculation based on input-output methodology and the Concept [Rasporjazhenie Pravitel'stva RF ot 20 maja 2023 g. № 1315-r] and Strategy of Scientific and Technological Development [Ukaz Prezidenta Rossijskoj Federacii ot 28 fevralja 2024 g. № 145] contain measures to ensure the scientific and technological stability of Russian economy under sanctions. In addition, the major innovative project of state importance (MIP SI) determines the interaction of federal governments and research centers to aggregate the achievements in environmental for the climate policy [Rasporjazhenie Pravitel'stva RF ot 29 oktjabrja 2022 g. № 3240-r; Shirov, 2023, pp. 728–737]. According this innovative project, the implementation of climate policy in Russia provides for the creation of the Unified National Monitoring System, which monitors the climatically active substances (CAS) and takes into account the methodology of the Intergovernmental Panel on Climate Change (IPCC). The responsible curators of key blocks in the project at the level of federal executive authorities are Ministry of Natural Resources and Environment of the Russian Federation and Ministry of Economic Development of the Russian Federation.

## Regionalization of climate policy of the Russian economy: outlook

The Russian economy feature is the significant difference in the economic development due to a large extended area, which locate in different climatic conditions. The input-output method allowed to assess structural changes at the regional level In Soviet Union. this method contributed for the formation of the five-year economic plans by The State Planning Committee (Gosplan), created scenarios and determinated the directions of development of Soviet Union. The Central Statistical Directorate (*now* – Federal State Statistics Service, *Rosstat*) formed the necessary statistics for regionalization of the Leontief method. In this fact, the experts identified structural changes of the economies of various regions of the USSR [Sayapova, 2020, pp. 31-35; Masakova, 2019, pp. 119-128].

Now, Rosstat does not generate the necessary statistics for the direct usage of the method for regions of the Russian economy. However, the statistics of rail transportation of different goods between federal districts allow for "scaling" the methodology of input-output and create "specific MRIO" for federal districts of Russian economy [Shirov, 2022, pp. 153-161]. As a result, "methodologies difficulties" can be overcome by the power of scientific foundation of Russia. Furthermore, the last unique strategic document, that takes into account the entire space of the Russian economy is The Strategy of the spatial development of the Russian Federation [Rasporjazhenie Pravitel'stva RF ot 28.12.2024 N 4146-r]. The document of the strategic planning and methodology determinate two contours of the Russian economy.

## Conclusion

Thus, the climate policy is a key trend and is taken into account in the strategic and methodological framework in the Russian economy despite the sanctions pressure. The global recognition of the input-output methodology provides scientific justification of the Low-Carbon Development Strategy of the Russian Economy, and MIP SI includes IPCC methodology for analysis and monitoring CAS gases for the elaboration of climate policy for sustainable economic development. Furthermore, the international recognition of MSU experts also underlines the strong scientific foundation of the Russian economy.

And Russian government ensures the stability of the national economy despite sanctions due to following the goals of strategic documents and the scientific background.

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# Artificial Intelligence in the Banking Sector of the Russian Federation

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**Abstract**. The article describes the application of artificial intelligence (AI) in the banking sector of the Russian Federation. The history of AI development in Russian banks is analysed, compared with international practice, and key areas of application such as scoring, automation, risk analysis and personalisation of services are highlighted. Strategies for further development of AI are proposed, including integration with CRM systems, staff training and development of ethical standards. The potential of AI to improve efficiency and service quality in the banking sector is emphasised.

**Keywords**: artificial intelligence, banking sector, machine learning, automation, risk analysis, CRM systems, ethical standards, scoring, personalisation of services, robotic process automation (RPA), creditworthiness, financial technology, Russia.

## Introduction

AI is rapidly transforming the banking sector, including in Russia, enabling optimized operations, increased efficiency, and improved customer service.

Driven by intense competition, AI is a key tool for developing efficient products and services. It analyzes vast datasets to predict customer behavior, enhancing credit assessments and service processes. AI also strengthens transaction security by detecting fraudulent anomalies. Furthermore, AI automates compliance processes, vital in a dynamic regulatory landscape.

Therefore, AI development in Russian banking is both a trend and a necessity for operational success and maintaining a competitive edge.

## History of development of artificial intelligence in the banking sector of Russia

The initial forays of artificial intelligence into banking started in the late 1990s, but its active application commenced around the mid-2000s. Simple machine learning algorithms were introduced to analyze data, automate tasks, and forecast indicators. For instance, credit scoring models used historical data to predict borrower behavior, significantly reducing loan non-repayment risks.

Around 2010, Russian banks began widespread adoption of AI-powered automation, notably chatbots and virtual assistants. These solutions significantly reduced call center load and improved service speed, answering routine queries, providing initial consultations, and even assisting with loan applications.

In addition, there was an active transition from traditional analytical methods to the use of Big Data and predictive analytics. Banks started collecting huge amounts of customer, transaction and transactional data to use this information to develop personalised offers and services [Latinia, 2024]. Machine learning helped banks to understand better customer behaviour and offer products tailored to their needs.

The development and implementation of Robotic Process Automation (RPA) has been key for Russian banks, significantly boosting productivity and cutting operating costs. RPA, robotic document processing, and automated decision-making are now widespread. For example, Sberbank actively uses AI for loan application processing, fraud detection, and automated accounting.

## Application of AI in the banking sector of the Russian Federation

### 1. Scoring and evaluation of clients' creditworthiness

Description: AI systems analyse large amounts of data about customers, including their credit history, income, expenses and online behaviour.

This allows banks to more accurately assess the creditworthiness of borrowers and make informed decisions about granting loans [Sharma, Singh, 2022].

Examples: The use by machine learning algorithms: Models such as decision trees and neural networks help predict a customer's probability of default. Analysing unstructured data: Processing text data from social media and other sources to learn more about customers.

The following diagram will suggest the stages of project implementation and the cost elements to be faced.

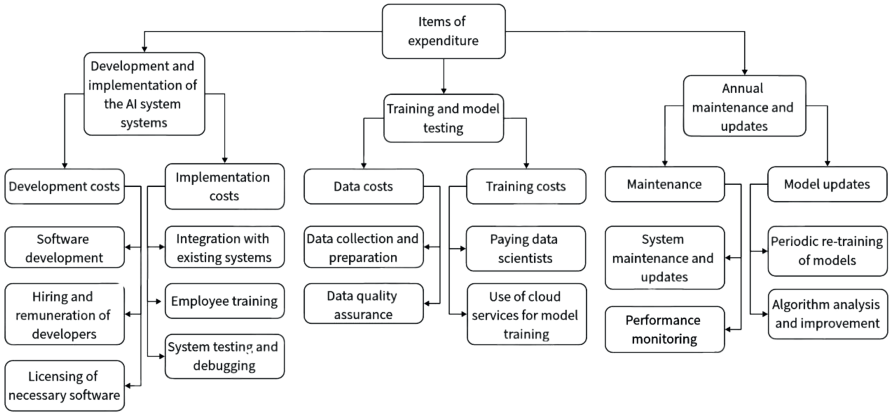


*Figure 1.* Cost items on implementation of scoring and assessment of customers' creditworthiness

## 2. Risk analysis

Description: AI technologies help banks to identify and assess risks associated with lending, investments and other financial transactions. This allows them to make more informed decisions and minimise potential losses.

Examples: Risk prediction models: Using machine learning algorithms to predict the probability of loan default/crisis. Market data analysis: Monitoring and analysing market data to assess investment risks [Decoding Art of Market Analysis..., 2023].

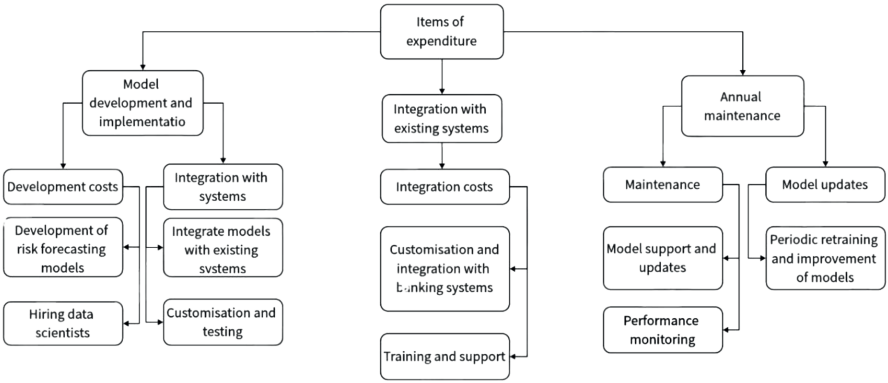


*Figure 2.* Cost items for risk analysis

## Our suggestions for AI applications

### 1. Integration of AI with CRM systems

Description: Integrate AI technologies with existing CRM systems to better analyse customer data and create personalised offers.

Examples: Customer data analysis: Using AI to analyse data from CRM systems to identify customer patterns and preferences. Marketing campaign automation: Creating and launching personalised marketing campaigns based on AI-derived data.

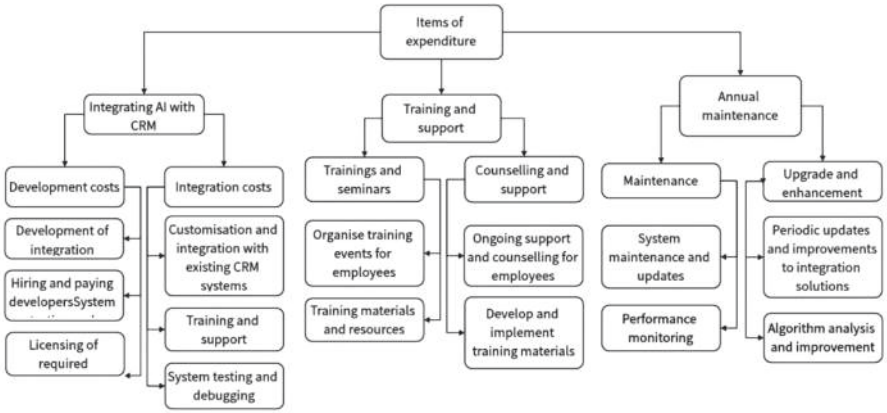


*Figure 3.* Cost items for integrating AI with CRM systems

## 2. Training and development of staff in the application of AI

Description: Invest in staff training and development to enable staff to use AI technology effectively and maximise its potential. This will reduce time and increase efficiency. But staff need to do due diligence on the solutions offered by AI.

Examples: Training and workshops: Organise training events for employees on how to use AI technologies. Online courses and certification: Providing access to online courses and certification programmes.

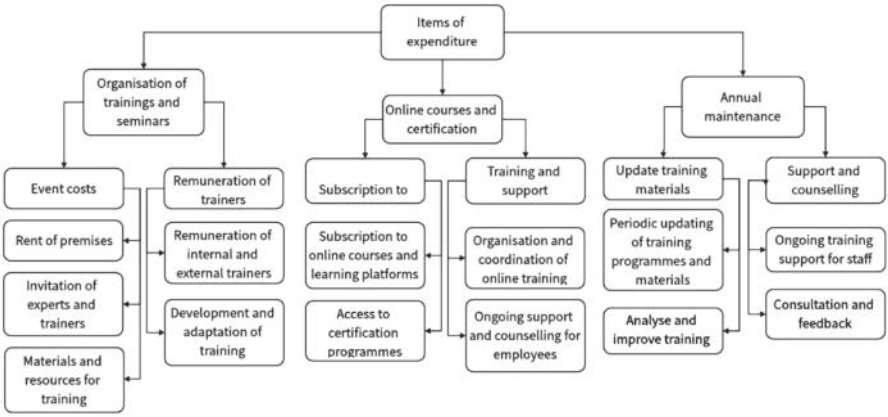


*Figure 4.* Cost items for training and developing personnel in the field of AI application

## 3. Developing ethical standards

Description: The development and implementation of ethical standards for the use of AI in banking aims to ensure transparency, fairness and safety in the application of AI technologies. These standards help to minimise risks associated with potential misuse and errors in algorithms, and ensure compliance with legal and regulatory requirements.

Transparency of algorithms. Transparency standards that require banks to disclose information about their decision-making algorithms, including credit scoring criteria, are increasingly important in the banking industry. This promotes fairness and accountability, allowing customers to understand the reasons for credit denial and improve their history, and regulators to identify discrimination in algorithms.

Data protection and privacy. Personal data protection standards that require banks to encrypt data, conduct regular security audits and train employees ensure customer privacy and prevent information leaks.

Responsibility and accountability. To minimise the risks of error and misuse of AI, banks need liability standards that include mechanisms for investigating incidents and assigning responsibility for controlling and monitoring AI systems.

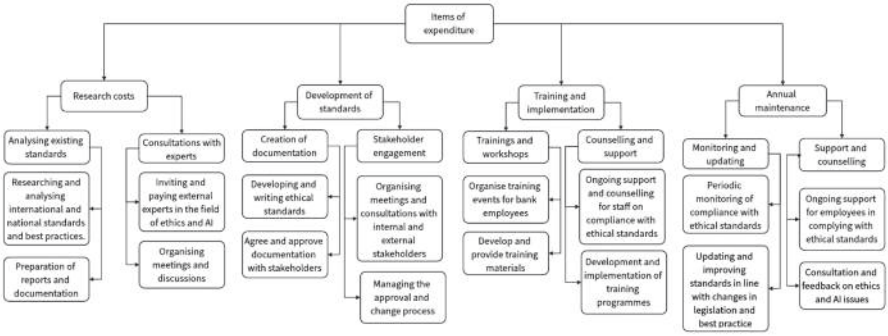


*Figure 5.* Cost items for the development of ethical standards

In conclusion, AI integration in the Russian banking sector significantly modernizes and increases efficiency. AI applications in credit scoring, automation, risk analysis, and personalization comprehensively improve banking processes. Proposed extensions like CRM integration, staff training, and ethical standards bolster responsible AI use, ensuring ethical, transparent implementation with data protection.

Overall, the strategic deployment of AI in the Russian banking sector offers prospects for innovation, increased efficiency and improved customer service while meeting regulatory and ethical standards.

## Conclusion

The use of AI in the Russian banking sector has great potential to improve the efficiency and quality of customer service. The introduction of AI technologies allows banks to automate routine operations, improve scoring and credit assessment, and analyse risks. Our proposals for the application of AI include integration with CRM systems, staff training and the development of ethical standards. Comparison with international

practice shows that Russia has good prospects for further development and implementation of AI in the banking sector.

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# The Influence of Corporate Culture on the Choice of Project Management

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**Abstract.** In today's world, information technology plays a crucial role in global economic development. The digital economy is driving the development of all other sectors of the economy. In such conditions, companies whose activities are related to information technology are developing at a high rate and becoming more and more influential and important. As a rule, such companies work on the principle of project realization and face the need to choose optimal project management methods. Many factors influence the choice of project management methods, but it is not known whether corporate culture has a direct impact on the choice of project management methods.

**Keywords:** Corporate culture, project management, agile methodology, waterfall methodology, IT companies, connection between corporate culture and project management methods.

## Introduction

In the context of digitalization of all spheres of social life, information technologies (hereinafter referred to as IT) are becoming one of the most significant factors of sustainable economic development [Hubr, 2023]. IT companies play an important role in the formation of a new model of economic growth in Russia, ensuring innovative development, increased labor productivity, and technological independence of the country. The modern IT industry acts as a driver of transformation of both government institutions and business structures, facilitating their adaptation to the rapidly changing conditions of the digital economy [Melnikov, 2020].

IT companies are among the fastest growing players in the domestic market. They provide software development, system integration, technical support, and the creation of digital platforms in demand both in the public sector and in the commercial space [Adamskaya, 2018]. According to the Russian Ministry of Finance, as of 2023 there are more than 50 thousand IT companies registered in the country, including both small startups and large corporations such as Yandex, Ozon, CROC, Avito, etc. These companies employ hundreds of thousands of specialists and contribute significantly to the country's GDP [ICT Moscow, 2023]. These companies provide employment for hundreds of thousands of specialists and make a significant contribution to the country's GDP [ICT Moscow, 2023].

## The influence of corporate culture on the choice of project management methods

In order to identify the nature and degree of influence of corporate culture on project approaches in a big Russian IT-company within the framework of this research, methods of quantitative analysis were used [Abdomerovich, 2017].

A mass questionnaire survey of employees of the company will be conducted. The purpose of the survey is to obtain statistically significant data allowing to identify general regularities and possible correlation between the parameters of corporate culture and the choice of using certain methods of project management.

The results of the research will be analyzed to confirm or refute the hypothesis. To process the results of the questionnaire survey, it is assumed to use methods of quantitative data processing, including correlation analysis using Pearson's independence criterion.

## Empirical results

To reveal the presence or absence of a relationship between the company's corporate culture and preferences in the choice of project management methods, Pearson's independence index was calculated. This index allows estimating the strength and direction of linear dependence between two quantitative variables.

The calculation of the coefficient (Table 1)

*Table 1*

**Contiguity table**

| | PM 1 | PM 2 | PM 3 | PM 4 |
|---|---|---|---|---|
| Culture 1 | 1 | 3 | 2 | 11 |
| Culture 2 | 4 | 6 | 26 | 10 |
| Culture 3 | 0 | 3 | 6 | 0 |
| Culture 4 | 4 | 4 | 20 | 40 |
| Culture 5 | 5 | 10 | 5 | 40 |

*Source:* compiled by the author

Expected values (Table 2)

*Table 2*

**Expected values**

| | PM 1 | PM 2 | PM 3 | PM 4 |
|---|---|---|---|---|
| Culture 1 | 1.19 | 2.36 | 5.43 | 8.03 |
| Culture 2 | 1.60 | 3.19 | 7.35 | 10.86 |
| Culture 3 | 0.21 | 0.42 | 0.96 | 1.42 |
| Culture 4 | 1.18 | 2.36 | 5.43 | 8.03 |
| Culture 5 | 0.83 | 1.67 | 3.83 | 5.67 |

*Source:* compiled by the author

This value is interpreted as a very weak positive correlation. If we take the significance level as 5% (standard value), there is no reason to refute the hypothesis of independence. However, it is worth noting that the result tends to be statistically significant, which means that there is a slight tendency for a joint change in one direction between the variables: with an increase in the subjective assessment of corporate culture, respondents on average were slightly more inclined to use agile project management methods. Nevertheless, the strength of the relationship is at a low level and does not allow us to speak about a pronounced linear dependence.

## Conclusion

Based on empirical data collected through interviews and questionnaires, the third chapter revealed that corporate culture does not influence the choice of project management methods in the company. Based on qualitative data, it was revealed that corporate culture has a supporting function, ensuring the stability of the project environment, forming the atmosphere in the teams, but does not have a decisive influence on the choice of management methodology itself.

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# Product Placement in Film Making as a New Paradigm for Brand Building

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**Abstract**. The article is devoted to the study of product placement in films and TV series as an element of enhancing brand awareness and increasing the sale of goods. The author's attention is aimed at the definition of the concept of product placement, its essence and mechanism, as well as the frequency of its use and effectiveness in Russia. An attempt is made to identify the main positive and negative sides of this method of promotion. Examples of successful and unsuccessful work with product placement on the Russian television market are outlined. The author also identifies the criteria for successful product placement.

**Keywords**: product placement, promotion, integration, nativeness, brand, advertising, film.

## Introduction

In the contemporary world, television plays a crucial role in the life of every individual. It influences people's cultural consciousness, thoughts, outlook and preferences. In addition to various programmes, television has an advertising block. And nowadays a significant amount of time is allocated for advertising messages which are created according to certain language norms. The linguistic nomination of objects and phenomena of the external world is inextricably linked with the peculiarities of their perception by humans. It is known that language does not copy reality, but only reflects the process of its cognition by humans in a certain way [Orlova, 2012, p. 237].

However, due to the abundance of commercials on TV, it is quite difficult for young brands to announce themselves and their product in the huge information flow, so they search for new approaches to promotion on TV plays an important role in the development of the company.

One such approach is product placement, as it allows brands to blend their product into the storyline of a TV show or film.

## Essence of product-placement

Film industry, like theatrical performing art, is a powerful marketing tool that allows brands to expand their reach and reach new audiences [Orlova, 2007, p. 240]. Quite frequently in various films or TV series, it can be seen how the characters use certain brands and their products. They interact with the items, showing that this thing is very essential and necessary. A company pays to have its product appear prominently in a work of art [Yushkova, 2017, p. 768]. Usually a few seconds are allotted to show the product in close-up. The frequent reference of the characters to the product catches the attention of the viewers and leaves an imprint in their minds. This is what is called product placement. 'Product-placement is the integration of a product or brand into a work of fiction, such as a film, series, video, painting, or TV shows [Internet, date of application: 17.02.2025].

Product placement is an effective form of marketing strategy because the adverts are included in the content or context, which means there is no glaring reference to the direct sale of the product.

It's also worth noting that brand placement is gaining popularity these days. According to Nielsen Media Research, 58% of viewers recognised a brand when watching a product placement in conjunction with an advert, while 47% of viewers recognised a brand shown in an advert alone. Research has shown that brand placements can be a good alternative to traditional advertising, especially when consumers these days tend to avoid adverts [Górska-Warsewicz, Kulykovets, 2017].

Currently, American companies spend just over $7.6 billion annually just on product placement in films alone. In television programmes and series, the expenditure is much higher. As far as Russia is concerned, product placement still accounts for about 1% of the entire advertising market [Orishev, 2017, p. 5].

## Positive factors of using product placement

There are a number of advantages of product placement over other types of advertising.

1. The invisibility and naturalness of advertising. The presence of product placement is considered less annoying than direct advertising in the form of commercial breaks. Here the brand is perceived as a whole with the film. The character interacts with the item, he can tell his partner about the brand, ask him to pitch this product and so on.

2. Highlighting the brand among competitors and adverts for other products. Due to the large number of commercials on television, which follow each other, people do not notice the message embedded in them, and quite often change the channel or switch off the sound during the advertising block. Companies choose native advertising in films and TV series, so all the attention of the audience is directed to the screen. There is not so much competition, hence the audience remembers the product better.

3. Large and long coverage of the target audience. Good artistic works are often revisited, so there is a reminder of the product without any additional investment.

4. Adding value to the product/brand. Often media personalities, characters in films form the tastes and preferences of the audience. And if this person uses a certain product, it already becomes a good and quality item and is associated by the viewers with it.

5. The opportunity to promote goods that are prohibited in classical advertising. For example, tobacco, alcohol products.

Thus, it is safe to say that this type of native advertising can be a splendid way to increase brand sales and contribute to its recognisability.

## Negative factors in the use of product placement

Undoubtedly, like all types of advertising, product placement has disadvantages:

1. The success of advertising is conditioned on the success of the film. Unpredictable effect of product placement, as no one can predict whether the film will be popular and whether it will be reviewed in the future.

2. Long launch process. Launching a film is much longer than producing a 30-second video.

3. Inability to change advertising after launch.

4. Inconsistency of moments. Since the process of launching a film and TV series can take several years, you need to understand that during this time the product may undergo some changes. And already filmed advertisement will misrepresent the product.

5. Pricing. In the market so far there is no definite system of understanding the formation of the price for this type of advertising. In this case, quite often video producers come to promote the product through acquaintances, connections and so on. And when it comes to the price, abstract sums are called. This hinders the development of the industry, evoking mistrust [Internet, date of application: 11.02.2025].

## Experience of using product placement in Russian film making

Having considered some Russian films, there are some examples of successful and unsuccessful works.

Firstly, it is worth highlighting the film 'New Year tariff '. The plot of the film is built around mobile communication. The protagonist on New Year's Eve loses his phone and comes to the MTS salon for a new one. The employee offers him to connect to the tariff 'New Year'. And then miracles begin to happen to him. The plot of this film was shown on federal channels in the MTS commercial, and in the salons people can buy the tariff 'New Year'. This shows an interesting and well-thought-out advertising and marketing campaign. As for the product placement, the brand is shown only at the beginning and end of the film. But the mobile phone service and tariff helps the hero throughout the story. Also, when the MTS employee shows the hero the 'New Year' tariff, she accompanies it with the phrase 'The tariff of your dreams', which reinforces the audio component. So, this film presents a playful kind of product placement and has a storyline.

Secondly, the TV series 'Kitchen. War for the Hotel' is a good example of geographical product placement. The authors of the series 'Kitchen' filmed 2 seasons, where they showed the advantages of the Sochi resort 'Krasnaya Polyana'. Heroes go snowboarding, go up in a hot air balloon, go to the baths, and visit the children's areas. There are also many scenes in local areas with gambling, which, for example, would be impossible to realise using TV spots and other types of advertising. There is a storyline and a playful kind of product placement in this series.

Thirdly, there is product placement in the TV series 'Molodezhka'. NIVEA products can be considered an integral part of it. The product is

advertised in different ways: the heroes use different cans (shower gel, deodorant) after training and at home, the logo of a separate line of care cosmetics for men (NIVEA MEN) brand is placed on the boards of the hockey arena (sponsorship), on the sports clothing of the heroes. Also worth noting is an episode from season two where the team captain is offered to star in a commercial for 'NIVEA MEN', and then it is shown on TV. It turns out that the show shows how they shoot adverts for brand products. This is an astonishing advertising move. Therefore, this work is a game product placement with a special scene.

Also worth noting is the film 'Daddy's Daughters. New Year'. At the end of the piece, the hero uses a 'Sberbank' card and utters the phrase 'I am Father Frost with an interest-free period of 120 days' and pays for accommodation in the presidential suite through a contactless payment terminal. Even with the visuals of the credit card, its benefits, its use by a positive successful character and a special scene, the ad is not native as its appearance at the end of the film is perplexing and annoying to the audience.

## Conclusion

Thus, product placement is a good method of promoting various products because of the nativeness of advertising.

Product placement in films and TV series can increase demand and brand awareness. The picture is often close to life, which creates more credibility with the audience. Moreover, it is worth noting that actors/media personalities who use the product can make viewers more loyal to the advertised product. And this choice can be correlated to the media halo effect — people tend to trust famous personalities.

However, in order to succeed, product placement must fit the plot and genre of the film, the images of the characters and their lives. Also, the target audience of the project should be consistent with the brand, the name and logo are readable or recognisable. The project should not be oversaturated with products, otherwise it will make the audience feel rejected or disliked.

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# The Substitution Patterns of Natural and Lab-Grown Diamonds on the Russian Retail Market

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**Abstract.** Today the jewelry segment of the world's diamond market is going through troubling times. Some specialists believe that natural diamonds as goods are under threat of extinction as diamond reserves are close to depletion and lab-grown diamonds are gaining strength thanks to low production costs and, consequently, lower prices. This report investigates the degree to which consumers in Russia are ready to switch from natural diamonds to lab-grown ones. To achieve this goal, we analyse online retail market using discrete choice demand models. The results suggest that natural diamonds are subject to little or no substitution by the lab-grown ones. Moreover, in the case of price cuts consumers are more likely to turn to natural stones. In conclusion, we suggest policy advice for future development of the market.

**Keywords:** natural diamond, lab-grown diamond, substitution, demand models, policy advice.

## Introduction

In recent years the jewelry segment of the global diamond market has plunged into a phase of a crisis. Apart from sanctions on the largest diamond-mining company in the world (Russian ALROSA) [RBC, 2024] and unstable geopolitical conditions, demand is fluctuating along with prices, stocks accumulate on the intermediate stages of production [BCG, De Beers, 2024], diamond-mining companies are forced to slow down their activity [Vedomosti, 2025]. Moreover, diamond resources in nature

may be close to exhaustion, at the very least, a slow decline in mining is predicted:

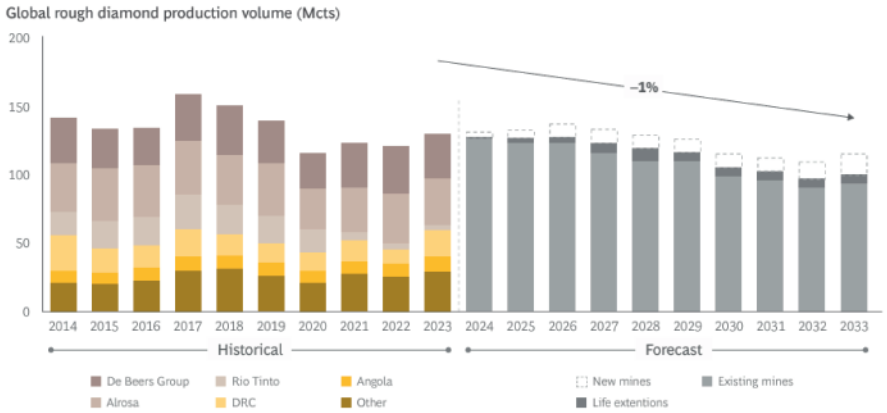



*Figure 1.* Rough diamond production volume in the world
*Source*: BCG & De Beers, 2024. The Future of the Natural Diamond Industry

Meanwhile, laboratory-grown diamonds tend to become cheaper and cheaper due to their production costs dropping with the technological progress [BCG, De Beers, 2024]. What is more, they are more ecological and ethical, therefore they seem to be perfect substitutes for natural stones [Bagathi et al., 2021].

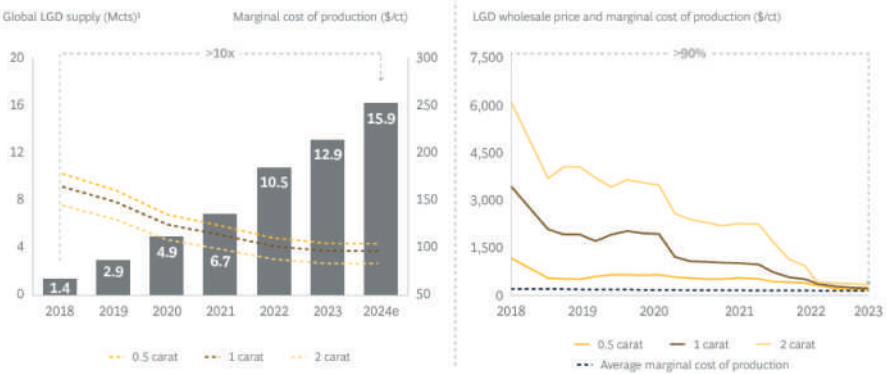



*Figure 2.* Lab-grown diamonds cost of production, prices and production
*Source*: BCG & De Beers, 2024. The Future of the Natural Diamond Industry

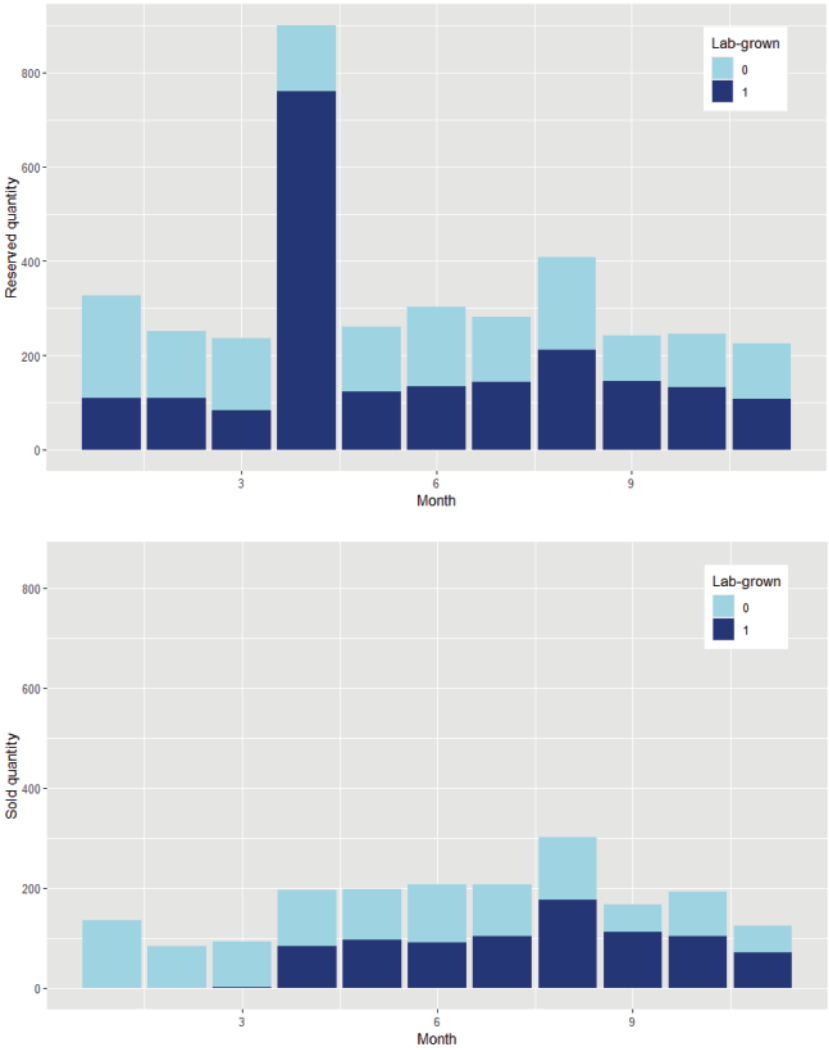
## Literature review

If we talk about academic literature, the researchers usually focus on the factors influencing the price of a diamond. Specifically, a stone's characteristics are named as the key determinants [Wolff, 2015], especially from the consumers' side, and those characteristics are exactly the same for both natural and lab-grown diamonds. When it comes to substitution patterns, we can find some examples of products with a similar situation on their markets. For instance, fur [Achabou, 2020] and meat [Gustavsen, Mittenzwei, 2022] markets, where despite consumers' concern with ethical questions, natural products have an audience that refuses to switch to a synthetic substitute. The most studied market with a comparable situation is the rubber industry. There synthetic rubber appeared already in the middle of the 20th century and has competed with the natural product ever since [Solo, 1955]. Now, several decades later, we can see that those two types of rubber coexist efficiently on the market and are used in their own spheres of production [Ramli, Yusof, 2023]. So, what if diamonds also form two separate segments on the market with their own target audiences? This scenario is quite likely [Bagathi et al., 2021], however, in terms of substitution patterns, diamonds should be examined separately as unique products.

So, on the one hand, we have cheaper diamonds that correspond to modern ecological trends, and on the other hand – natural stones with a richer internal value. What do consumers think of this rivalry? That is exactly what we decided to investigate in the current research.

## Data

Data for the research has been collected monthly since March 2024 from a website of a jewelry company called MIUZ Diamonds. On the website there are natural and lab-grown diamonds with their prices and characteristics (color, weight in carats, clarity, shape). Based on the information on the site and our calculations, we assumed that diamonds that disappear from there the following month are likely to have been reserved, and those that do not return for 3 months can be considered sold. The sales figures for the 11 months from March 2024 to January 2025 are the following:




*Figures 3* & 4. Quantity of diamonds reserved and sold
*Source*: calculated by the author based on MIUZ Diamonds

Overall, it is worth noting that more diamonds were reserved than bought afterwards. Also, more lab-grown diamonds were reserved while more natural ones were sold. However, there are some extreme values in the data, such as the fourth month in the reserved section; the first 3 months in the sold section when nobody bought lab diamonds, and

the 8th month, when the design of the website changed. These extreme values need to be excluded from the analysis to avoid estimation bias in the models.

## Models & Results

To observe substitution patterns from the point of view of consumers, empirical demand models should be used. As diamonds are differentiated products and we observe people's choices, the best option is the theory of discrete choice. Specifically, 3 models are used in the research: multinomial logit, nested logit [Berry, 1994] and random coefficients model [Berry et al., 1995].

The first and simplest model showed that the demand for diamonds is inelastic, however there is a small but significant impact of price. Moreover, if a diamond is lab-grown, it becomes less attractive to the clients. The second model allowed us to conclude that consumers on this market tend to choose a diamond within a particular group: either natural stones or lab-grown ones. Finally, the most complicated and the most informative model indicated that there is absolutely no substitution between the two types of diamonds. Moreover, at first it was found that if prices go down, people tend to switch from lab-grown to natural stones rather than vice versa, however this result was not confirmed in a deeper analysis. That means that people do not want to switch between the two groups in general.

## Conclusion & Discussion

In conclusion, the research uncovered that consumers consider natural and lab-grown diamonds as two "different" products. Therefore, the scenario involving two segments forming on the market is highly likely: different people prefer different diamonds. These results may be explained by several reasons. Firstly, diamonds are considered luxury goods, which are prone to conspicuous consumption [Bagwell, Bernheim, 1996]. Secondly, diamonds often serve as an expression of sentiment, and people tend to agree to overpay for such products [McGraw et al., 2016]. Finally, natural diamonds can be a profitable investment [Renneboog, Spaenjers, 2012], which, of course, does not apply to lab-grown stones.

## Recommendations

Based on the results discussed above, several recommendations can be made. The government should support diamond-growing industry, however without suppressing the natural diamonds segment. Diamond-mining companies can continue their operations without the need to reorient production towards laboratory stones as their audience is likely to remain loyal to them, however intensive marketing campaigns would be useful to remind customers of the true values of natural diamonds. Jewelry companies may consider the substitution patterns when making decisions about prices and about incorporating lab-grown diamonds into their production.

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# Innovations in Employee Training at Novatek Public Joint-stock Company

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**Abstract.** This study explores the role of corporate training innovations in transforming the business model of Novatek, a leading Russian LNG company. Through benchmarking and in-depth interviews, key challenges and growth opportunities in corporate learning were identified. Findings indicate that Novatek follows a traditional training approach, with limited automation and budget constraints. Transitioning to a breakthrough training approach is offered to Novatek. This approach implies that a company regards training as a key to competitiveness, uses the potential of human capital. In Novatek this will increase operational efficiency, HR-brand strength, and corporate culture adaptability. The study concludes that while the impact of training innovations on Novatek's business model is indirect, they do contribute to operational efficiency, HR brand development, corporate culture transformation.

**Keywords:** Corporate training, Learning and development, Innovation in education, Business model transformation, HR strategies, Workforce development, Digital learning, LMS implementation, Human capital, Competitive advantage.

## Introduction

Modern business development trends require companies to revise their development strategies, approaches to corporate strategy formation from the classical to the adaptive, formative or visionary approach [Reeves et al., 2012]. This undoubtedly has an impact on the business models of important Russian companies.

The research systematizes the tasks of personnel training, identifies the challenges and opportunities associated with innovations in corporate training, determines their impact on the business model using PJSC NOVATEK as an example, and formulates recommendations.

Tasks of corporate training in the realities of the Russian market

Innovation is understood as an implemented innovation that provides a qualitatively new level of production efficiency [Atamanova, 2015, p. 6]. Companies implement innovations to increase profitability. For the same purpose, companies have corporate training in HR departments. It is determined that with the help of corporate training a number of tasks are solved at once: closure of mandatory competencies, staff development, realization of human capital. Indeed, the more competitive a company is, the more the potential of human capital is realized.

## Problems with the implementation of innovations in personnel training at NOVATEK

The Russian company NOVATEK, a key player in the Russian and global LNG market, is facing external challenges and sanctions pressure. In such conditions, it has become more important than ever to maintain its competitiveness. An analysis of benchmarks in personnel training showed that NOVATEK lags behind leading LNG companies in many benchmarks. For example, Exxon Mobil uses more diverse corporate training methods; NOVATEK has not implemented an LMS system, unlike most other Russian and foreign competitors; the share of training costs in the total HR budget at NOVATEK is 2% which is lower [PJSC NOVATEK. Annual Report Development and Responsibility for 2023, 2024] than at Shell Exxon and Mobil (5-7%) [Investment in Workforce Development Surges Globally, 2023].

## Promising areas for innovation in personnel training

The benchmark analysis results in the formulation of four approaches to implementing innovations in personnel training: traditional, fragmented, adaptive and breakthrough depending on the budget for training and speed of business processes. Based on the in-depth interviews with NOVATEK's training managers, the company should be classified

as a traditional approach, because when implementing innovations in training, there is a lack of budget, bureaucratization of business processes, and the corporate culture is focused on results and profit.

In-depth interviews with NOVATEK managers, the head of the training department of a competitor company, and the CEO of Center-game digital studio led to the following conclusions. The key innovations in personnel training in Russia include LMS systems, VR-technologies and simulators, gamification of training, and mentoring using AI, but the use of blockchain technologies as an innovation in training has not yet been developed. Most respondents pointed out the important role of employee motivation in training, the need to use a systematic approach, and emphasized human capital to optimize training.

It has been determined that NOVATEK implements mandatory training, training of equipment suppliers and technical training, and uses different formats: in-person, remote, mixed, asynchronous and on-site training. At present, the work of the personnel training department is not automated, there is no LMS-system, but it is planned. VR-technologies will be applied limitedly on simulators in technical training; gamification is present limitedly in asynchronous online courses of mandatory training. The barriers to innovation in training have been budget constraints, bureaucracy, high key rate and staffing hunger. Thus, there are areas of growth in the implementation of innovations in NOVATEK's employee training.

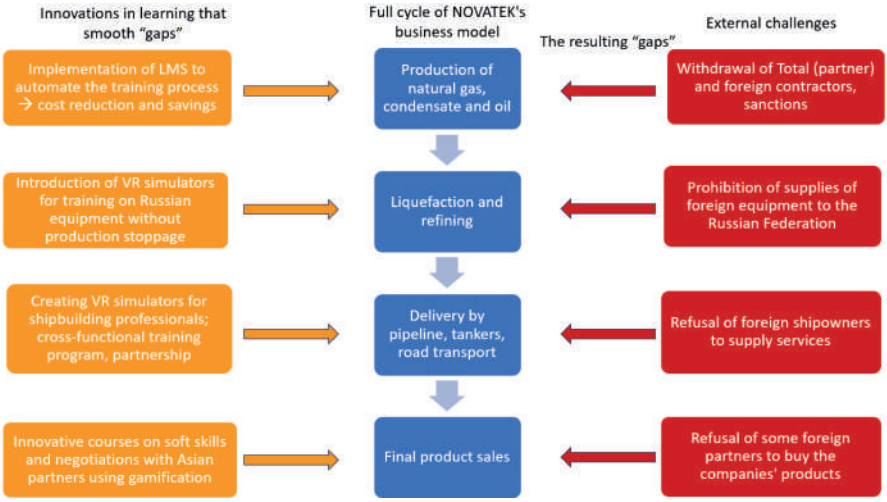
## The role of innovation in the transformation of NOVATEK's business model

The study determined that NOVATEK needs to transition from a traditional to a breakthrough approach in order to improve its efficiency and competitiveness in the face of sanctions and global challenges. This will lead to a transformation of NOVATEK's business model. Since personnel training is an additional business function, the impact on the transformation of the business model was indirect. It was determined that NOVATEK's breakthrough innovation in personnel training will lead to: greater safety and continuity of production (key priorities in the business model that affect profit, according to the Company's Report [PJSC NOVATEK. Annual report on sustainable development for 2023, 2024]); structural changes in the work of the HR Department and personnel training departments; production processes as a key element of the business model will be optimized; the Company's HR brand will

become much stronger; and the corporate culture will be transformed into a flexible and adaptive one.

## Recommendations for the introduction of innovations in personnel training at NOVATEK

In order to move to a breakthrough approach to introducing innovations in training, recommendations for NOVATEK were formulated (within budget constraints): implement a simple LMS system; introduce a pilot of VR training model; introduce AI in the mentoring system and career tracker; optimize business processes to reduce bureaucracy; track the formation of corporate culture by modifying leadership training and onboarding program; develop cooperation with educational institutions.




*Picture 3.* Scheme — how innovations in training smooth the "gaps" in the business model of a vertically-integrated company (made by an author)

The results of the study allow us to draw the following conclusions. The impact of innovations in personnel training on the transformation of NOVATEK's business model are as follows:

1. Transformation of key activities through reducing accidents and stoppage time;
2. Reducing logistics chains, writing innovative instructions for working on equipment;

3. Reduction of operating costs by reducing production stoppages and optimizing the work of the HR department;
4. Innovative courses on soft skills and negotiation skills with Asian partners using gamification will help in working with both Chinese suppliers and buyers;
5. Reallocation of the HR budget in favor of increased expenditures on personnel training;
6. Strengthening the HR brand;
7. Flexibility of corporate culture;
8. Optimization of R&D

Innovations have a greater impact on production efficiency, competitiveness and, consequently, profitability of the Company. Improving these parameters is key for the Company, so the impact of corporate training innovations on the business model should be improved and optimized. The above recommendations will help NOVATEK achieve this goal.

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# Digital Transformations in Elt

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**Abstract.** Digital transformation in English Language Teaching (ELT) refers to the integration of digital technology into various aspects of language learning and teaching. This transformation has been accelerated by advances in technology and the need for effective remote learning solutions, especially in recent years. Here are some key areas that will be dealt upon in this research: online learning platforms and neuronets. All these opportunities can be used in terms of creating new teaching aids that are aimed both at entertainment and effective learning. There comes a very controversial question whether to trust the quality of these materials or not. Consequently, the level of teachers' professionalism is very essential as his or her role is to access the validity of these aids.

**Keywords:** digital transformation, ELT, neuronets, online learning platforms, teaching aids.

## Introduction

Digital transformation provides an opportunity to enhance the efficiency and quality of education. Scientific research highlights that the integration of digital technologies into education not only improves the quality of learning but also helps students develop essential competencies, which are critical factors for their future professional success. The researchers of AI provided analysis that demonstrated that mobile applications increase students' proficiency in English by 14%, proved that interactive video materials improved the listening comprehension of English among

learners of English as a second language by 22%, showed that students using AI-supported adaptive lessons demonstrated a 15% improvement in test results compared to traditional teaching methods [M. — L. Chen, 2022, p.38323]

With the changing educational environment, the role of the teacher also evolves. The teacher becomes not only a bearer of information but also a curator of the learning process, guiding students in their independent search for knowledge.

As a result, the implementation of innovative computer technologies in the educational process becomes not just desirable but necessary for preparing qualified specialists. An important area is also the integration of AI with other educational technologies, such as virtual reality and augmented reality, which will allow for the creation of more immersive and interactive educational environments [Jukes, I., McCrea, 2020, p.10]

## Practical issues of implementation of AI into ELT

Today, there is a wide range of digital technologies, online resources, and platforms. We will focus on one of these tools. The paper includes information about the practical application of digital worksheets in ELT. These worksheets were generated by a neural network on the Twee platform [https://twee.com/links].

It is important to identify the prerequisites to using digital worksheets: aftermath of corona, convenience and time management, digitalization of the society. It happened because digital worksheets brought a lot of advantages such as clarity and structure of the material and the possibility to review the material countless times. The disadvantages are numerous. The most widely-spread hardships are difficulty in finding ready-to-present worksheets (need to be edited) and structure might not coincide with the teacher's vision of the lesson.

To improve the effectiveness of working with digital worksheets there should be given some recommendations: 1) introduction to the topic (open questions, discussion, controversy to elicit the knowledge and experience that a learner already has; 2) introduction to unknown vocabulary; 3) actual work with the worksheet (the ideal worksheets activate all 4 types of speech activities: speaking, reading, listening and writing).

## Conclusion

The integration of Artificial Intelligence (AI) in English Language Teaching (ELT) has the potential to revolutionize the way language is taught and learned, especially in speaking. Modern artificial intelligence (AI) technologies, such as chatbots with machine learning elements, also provide students with the opportunity to practice spoken language in real-time. An example is the ChatGPT program, which adapts to the student's needs by offering a variety of dialogue scenarios [Babakhanova, 2024, p. 74]. Students can communicate with bots that simulate native speakers, which provides practical communication experience and increases their confidence in speaking, as the chatbot is ready to engage in endless practice, allowing students to use and reinforce their newly acquired vocabulary and grammar [Budnikova A. S., Babenkova O. S., 2021] Here are some key conclusions regarding the impact of AI in this field:

AI can analyze individual learning patterns and adapt content to suit the specific needs and pace of each learner. This personalization enhances engagement and improves outcomes.

**Enhanced Feedback:** AI-driven tools can provide immediate and constructive feedback on language use, pronunciation, and grammar. This allows learners to make adjustments in real time, facilitating quicker improvement.

**Accessibility:** AI technologies can make language learning more accessible to diverse learners, including those with disabilities. Tools like speech recognition and language translation can support a wider range of students.

**Resource Efficiency:** AI can automate administrative tasks for educators, such as grading and tracking progress, allowing teachers to focus more on instruction and student interaction.

**Interactive Learning Environments:** AI can support the creation of immersive and interactive learning experiences through chatbots, virtual assistants, and gamified learning platforms, making the process more engaging.

**Data-Driven Insights:** the use of AI in ELT can generate valuable data on learner performance and behavior, enabling educators to make informed decisions about curriculum design and teaching strategies.

**Challenges and Considerations:** while the benefits are significant, there are challenges to consider, such as the need for teacher training in AI tools, concerns about data privacy, and the importance of maintaining a human element in language learning.

In conclusion, AI holds great promise for enhancing English Language Teaching by providing personalized, efficient, and engaging learning experiences. However, its implementation should be thoughtfully considered to address potential challenges and ensure that it complements traditional teaching methods rather than replacing them.

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# It Solutions in Shaping New Economic Structures: Digital Transformation and Economic Stability

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**Abstract.** This article explores the profound impact of digital transformation on the structures and practices of the modern economy. It examines how the integration of digital technologies is changing business efficiency, consumer interaction, and overall economic sustainability. The growth of the digital economy's share of GDP varies significantly across countries. The widespread adoption of digital solutions, including cloud computing, artificial intelligence (AI), the Internet of Things (IoT) and big data, has been shown to improve operational accuracy, productivity and decision-making across a wide range of industries. The article highlights the importance of proactive adaptation of regulatory frameworks, investment in digital infrastructure and education as critical strategies to maximize the benefits of digital technologies for inclusive and sustainable economic growth.

**Keywords:** Digital transformation, IT solutions, economic models, business efficiency, economic resilience, innovation, artificial intelligence (AI), cloud computing, Internet of Things (IoT), cybersecurity, digital economy, market adaptation, technological development, automation, regulatory challenges, sustainable growth, digital infrastructure, economic stability, smart technologies, globalization

## Introduction

In recent economic discourse, the term "revolutionary change" in the economy has been understood to signify not only the industrial revolution or the mass automation of production, but also the advent

of digital transformation. To put it simply, digital transformation is the introduction of digital technologies into all areas of business and society. It has compelled companies and entire industries to reconsider the way they work, find new ways to create value, and interact with customers. Therefore, contemporary economic models are being shaped, wherein information and technology have emerged as pivotal resources, complementing traditional labor and capital.

## Digital economy in GDP

Recent studies have shown significant differences in the contribution of the digital economy to the Gross Domestic Product (GDP) of different countries. The purpose of this study is to examine and analyze how digital technologies, or more specifically, their adoption, have affected the GDP of selected countries over the last decade. For this purpose, open-source data has been collected with a focus on GDP levels in China, Russia and the UK.

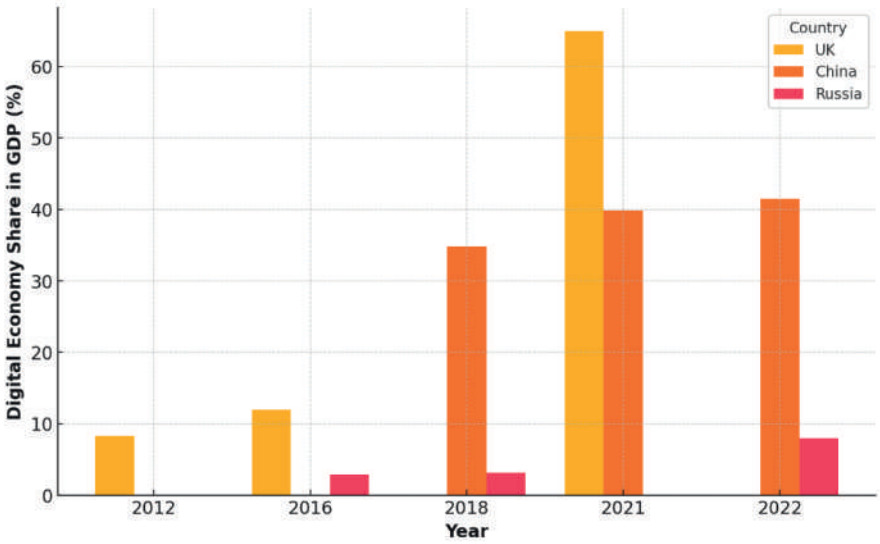


*Figure 1.* Growth of the Digital Economy in GDP

In Russia, according to data from the Federal State Statistics Service (Rosstat), the share of high-tech and knowledge-intensive industries in the GDP was 21.3% in 2016. By 2021, the gross domestic expenditures on

the development of the digital economy amounted to 4.8 trillion rubles, reflecting a 19.3% increase compared to 2020.

In China, the digital economy has experienced rapid growth, with its share in the national GDP increasing from 35.9% in 2018 to 42.8% in 2022. This expansion underscores China's significant advancements in digital infrastructure and technology adoption.

For the United Kingdom, specific data on the digital economy's share in GDP for the years 2012, 2016, 2018, and 2021 were not readily available in the provided sources. However, the UK is recognized as a highly developed post-industrial state, ranking as the 9th largest economy globally by GDP based on purchasing power parity as of 2023. And the sharp increase in 2021 is due to the introduction of changes to UK legislation related to the strategy for economic development by 2025.

## The adoption of digital solutions

Digitalization, characterized by the pervasive integration of information and communication technologies (ICTs) into various aspects of society, has emerged as a significant catalyst for inclusive economic growth. The Internet and accessible technologies have played a pivotal role in this transformation by empowering individuals to engage in entrepreneurship and providing consumers with a broader array of goods and services. In developing countries, the adoption of digital solutions has been instrumental in overcoming infrastructural limitations. The advent of online education and telemedicine, for instance, has facilitated access to knowledge and healthcare, particularly in remote and underserved regions. This phenomenon is indicative of a broader shift towards more equitable economic development. However, the proliferation of technology concomitantly gives rise to novel challenges for the economy, including concerns regarding data protection and the necessity of adapting the labor market to the era of automation.

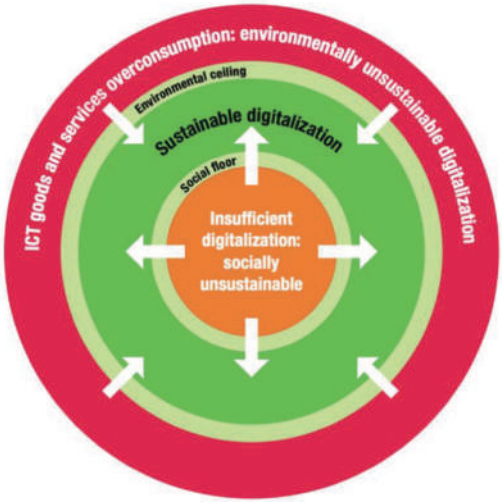


*Figure 2.* Conceptual illustration of sustainable digitalization
*Source*: UNCTAD, based on Wiedmann et al. (2023).

As shown in Figure 2 [UNCTAD report, 2023, p.129] digitalization ranks on a sustainability scale. Insufficient technological integration can lead to social exclusion, while excessive consumption of ICTs can result in environmental stress. The social floor represents the minimum level of digitalization needed to ensure equitable participation in the digital economy. The environmental cap defines the threshold above which digital consumption becomes unsustainable. Sustainable digitalization therefore lies at the heart of these two conflicting imperatives, driving economic and technological progress while reducing the risks of digital inequality and environmental degradation.

The impact of digital transformation on economic models is twofold: it creates significant opportunities for growth and innovation, while also necessitating societal flexibility and a willingness to embrace change [Kim J., 2017, p.13].

Digital transformation has been shown to strengthen the resilience of economies by increasing productivity, enabling efficient production, and promoting diversification to reduce reliance on traditional sectors [State Street,2025]. Just as teleworking and online platforms helped maintain employment and services during the global health crisis, digital tools can support business continuity in times of crisis. To maximize the benefits of digital transformation, policymakers must balance innovation and protection to ensure that new technologies like

AI and blockchain can thrive while mitigating risks. Expanding 5G, internet access, and digital education are also paramount to preparing the workforce for the changing demands of modern industry. By addressing these areas, economies can achieve sustainable growth and stability through digitalization.

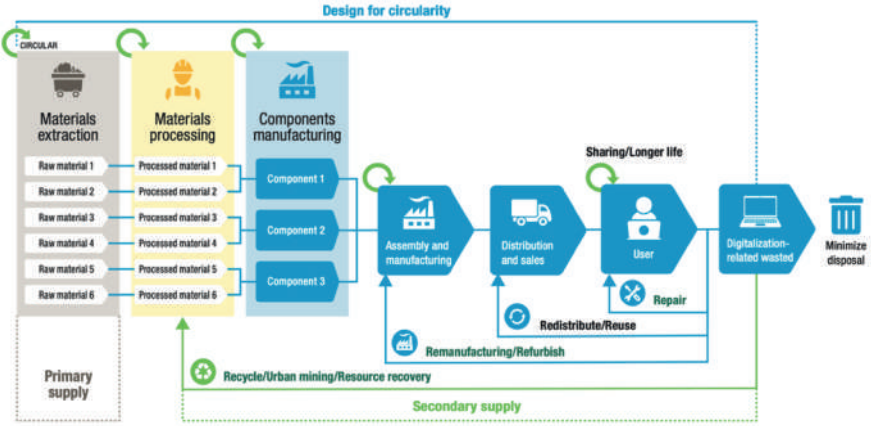


*Figure 3.* Circular economy for ICT goods
*Source*: UNCTAD, adapted from Deloitte (2023)

Digital transformation requires the sustainability of ICT production and consumption. As shown in Figure 3, the circular economy model emphasizes resource efficiency and waste reduction, and extends beyond distribution to repair, redistribution and reuse, thereby reducing e-waste. The secondary supply chain, which includes recycling and resource recovery, reintegrates materials back into production, thereby reducing environmental impact. A circular approach is essential for businesses and policy makers to ensure sustainable digitalization [UNCTAD report, 2023, p.136].

Equally important is the strategic integration of digital innovation within organizations. Simply acquiring new technology is not enough; processes need to be adapted, and employees need to be trained. Organizations that align their IT strategy with their overall goals will gain a competitive advantage and achieve greater profitability and market share [Marr B, 2023, p.12]. A cross-departmental digital approach promotes agility, allowing companies to adapt quickly to market changes, and companies that adopt such a strategy will maintain their efficiency and flexibility even in a highly competitive environment.

## As a «safety cushion» for the economy

Digital transformation has been shown to enhance economic stability by improving resilience, which is defined as the ability to sustain growth and withstand crises [Smith, 2023, p.9]. Digital solutions have been shown to act as a "safety cushion", enhancing productivity and enabling efficient production, thereby strengthening national economies [Jones et al., 2021, p.19]. Moreover, digitization has been shown to promote economic diversification, reducing reliance on traditional sectors and mitigating the risk of deflation [Brown et al., 2022, p.11]. During the global health crisis, for example, online platforms and remote work solutions ensured the continuity of employment and services, demonstrating the role of digitalization in economic stability. To maximize the benefits, governments, businesses, and society must proactively adapt. Key priorities include:

1. Regulatory Adaptation — Policymakers must strike a balance between innovation and protection, ensuring that emerging technologies such as AI and blockchain grow without over-regulation while mitigating risks.
2. Investing in digital infrastructure and education is also recommended, with governments advised to prioritize high-speed internet, 5G, and upgrading workforce skills. Businesses can support this by training employees and collaborating with academia, and by addressing these areas, economies can leverage digitalization for sustainable growth and resilience [Horizant Insights; 2024, p.2].

## Conclusion

Innovation and sustainability are the keys to competitiveness in today's business environment. Organizations must continually adapt their business models to technological change through flexibility and experimentation. Many manufacturers are already incorporating elements of the platform economy, such as proprietary marketplaces or subscription models, to diversify their revenues. Sustainable practices — energy-efficient data centers, green technologies and ethical data use — not only reduce risk, but also increase consumer confidence. The global nature of the digital economy means that cross-sector and international collaboration accelerates progress. Standardizing technologies, encouraging research partnerships and sharing data can create a more

interconnected and sustainable market. For some countries, collaborating with leaders in digital transformation can boost economic development at a time when competition remains fierce, and companies that adopt IT solutions quickly gain a clear advantage.

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# Improving Characteristics of Private Investor's Portfolio Through Art Objects

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**Abstract.** The research focuses on a private investor's portfolio, examining how including art objects affects its key characteristics. The goal is to identify conditions under which art investments improve portfolio performance. Using statistical, quantitative, and comparative methods, as well as G. Markowitz's theory, the study finds that art can reduce portfolio risk while maintaining profitability, though it does not boost short-term returns. These findings can guide private investors in shaping individual strategies. The main conclusion is that art investments are justified in the long term for risk reduction through asset correlation and hedging currency risks, particularly for Russian investors.

**Keywords:** investments, art objects, digitalization.

## Introduction

In the current era of economic and political instability, traditional investment options like stocks and gold are being reconsidered by investors seeking stability and growth [Goetzmann et al., 1993]. Investing in art objects is gaining traction as a promising avenue for placing capital, especially amidst reduced investment opportunities and heightened currency risks on the global stage [Shchurina, 2014]. However, the effectiveness of investing in art in Russia remains uncertain, with previous studies emphasizing the impact of investment duration on the returns from art investments [Worthington et al., 2004].

The growing demand for art in investment portfolios has prompted a study aimed at determining the conditions under which including

art objects can enhance portfolio performance [Jurevičienė et al., 2012]. This study involves tasks such as reviewing existing research, evaluating the state of financial markets, collecting data samples, and assessing the impact of art investments on investment portfolio characteristics. Two hypotheses have been proposed: first, that investing in art boosts portfolio returns without increasing risk, and second, that art investments reduce portfolio risks while maintaining profitability.

Art investments have been extensively explored throughout the world, shedding light on global art market trends, financial effectiveness of art investments using models like Markowitz, and market situations in various countries [Barro et al., 2023]. With the dynamic nature of the world, ongoing analysis and decision-making are essential for optimizing allocations to the art market based on up-to-date data. This article provides insights into the economic model, calculations, and effectiveness evaluation of art investments, emphasizing the need for continuous monitoring and adjustment in response to market shifts. Ultimately, the study aims to provide a comprehensive understanding of the economic viability of investing in art in today's ever-changing world.

## The current state of the art market

Cultural and artistic activities play a crucial role in society by preserving, creating, and disseminating cultural values, satisfying social, intellectual, and material needs, and forming human capital [Stetsenko, 2010]. These activities rely on intermediaries like investors, patrons, and auctions, with high-net-worth individuals typically including up to 5-10% of art-objects in their investment portfolios to diversify and maximize returns. The effectiveness of art investments is assessed using various art indices such as Mei-Moses and ARTIMX [Yakovleva, 2009].

The digital transformation of the art market is making art investments more accessible and less risky through the utilization of NFT technology and the availability of digital art objects. This transformation has led to a democratization of the global art market, with a growing segment of affordable works. The market for ultra-expensive works is shrinking, while the segment of works costing up to $5,000 is growing up to 80% of global transaction volume [ARTGID, 2023]. Russian investors are increasingly active in the art market, with significant growth in domestic art transactions and sales of Russian art at foreign auctions [Milonova et al., 2023]. In 2023, the volume of transactions on the domestic art market

grew by more than 125%, reaching over $25 million, which is the highest figure in the last 13 years [Artinvestment, 2023].

## The efficiency of art investments

To evaluate the effectiveness of art investments, the Markowitz model is used to compare art with traditional financial instruments like stocks and bonds. The Artprice Global Index is commonly used to track the returns on art investments, based on a vast database of auction results (25 million auctions and 290,000 art catalogs). The index is essential in determining the quarterly return and volatility of art investments relative to other financial assets, such as blue-chip stocks (presented by MOEXBC index) and government bonds (presented by RGBI).

Analyzing ruble indicators for assets we note that although art objects offer profitability (2.24% return), their higher risk profile (10%) compared to bonds (4%) makes them less financially effective investments, particularly in the context of the Russian market. Despite potentially lower financial returns, investing in art objects remains valuable for the aesthetic and cultural value they bring.

The evaluation of a portfolio expressed in US dollars reveals minimal expected returns for artworks, practically zero, with bonds showing a slightly negative projected return (-0.72%) and blue chips offering a more substantial positive return (1.35%). Volatility levels vary among the assets, with art objects displaying the lowest risk (11%), while stocks and bonds exhibit similar risk levels at 17% and 18% respectively. Bonds emerge as the least attractive asset due to generating negative returns and having the highest volatility among the assets considered. The optimal portfolio comprises blue chips and art objects, suggesting investing in art could be advantageous for collectors.

A correlation analysis indicates that art investments can aid in portfolio diversification as the returns on artworks show weak or negative correlation with stock and bond returns. The correlation values of art-objects with government bonds in Russia in ruble terms are negative (-0.53) and with blue chips are positive (0.18), with slightly different values when calculated in dollars (-0.004 and 0.23 respectively). This suggests that market fluctuations may not cause an immediate collapse in the portfolio value, as asset prices are more likely to change in different directions or rates. The contemporary art market infrastructure offers increased accessibility to art acquisitions through technology, enabling investments in digital works like NFTs to mitigate

risks associated with physical artworks. Investors can also participate in art indices through investment funds, particularly beneficial for those new to art investment or seeking fractional ownership of art objects.

## Conclusion

The characteristics of art objects distinguish them as a non-universal investment asset due to their unique blend of economic and aesthetic value. Traditionally associated with extra costs, low liquidity, and long-term growth, the art market is evolving with digitalization, introducing tools to mitigate these challenges. The undertaken study rejects the hypothesis that investing in art objects can enhance portfolio returns while managing risks. In the sample data, hypothesis 1 was refuted for both considered currencies.

However, hypothesis 2 was accepted for dollars but rejected for rubles, indicating that investing in art in foreign currency poses lower risks compared to other assets without a proportional decline in returns. On the other hand, investing in the Russian art market in national currency does not yield the same risk-reward relationship. A key benefit of art investments is the diversification it offers to hedge against portfolio risk, with art object returns showing little correlation with those of conventional financial instruments.

While incorporating art objects in an investor's portfolio can positively impact its characteristics under certain conditions, it is not a guaranteed source of steady income. Art investments are justified for diversification purposes mainly, striving to balance a portfolio's asset mix effectively. The research future goals include determining optimal asset allocation proportions, evaluating art investment prospects using econometric models, such as GARCH-1.1, and understanding external factors influencing this market segment.

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# Extending Factor Models of Stock Returns Through Machine Learning Methods

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**Abstract.** This paper focuses on the effectiveness of macroeconomic data in predicting Russian stock market returns. The goal of the study is to adjust the predictions of the CAPM (Capital Asset Pricing Model) model using machine learning algorithms and to verify the effectiveness of these algorithms in stock market predictions. We train the models on stock market data, exchange rate, interest rate, oil prices and bitcoin prices from 2018 to 2024, and analyse their effectiveness using mean values. Since we consider machine learning a part of Artificial Intelligence, the paper will examine the new solutions and challenges Artificial Intelligence will bring to stock market returns analysis. In this study we assert that macroeconomic data can slightly improve CAPM predictions, but further research is required.

**Keywords:** Russian stock market, CAPM, machine learning, AI, macroeconomic data.

## Introduction

The Russian stock market has experienced a drastic structural shift in 2022. This, in turn, rendered many previous papers that were describing the stock market obsolete: they were no longer explaining the reality. This state of affairs has created a significant gap in our theoretical understanding of the Russian stock market and the effectiveness of classic theoretical models on it.

Nevertheless, the lack of a strong theoretical understanding of the Russian stock market didn't prevent 2024 from being a year with

the highest number of Russian companies that went public, and 2025 is expected to bring even more companies on the market. On top of that, the development of the Russian financial market is one of the governmental goals for 2025. It is impossible to develop something without a thorough understanding of it. These two aspects create a strong need for a detailed analysis of the current stock market. Specifically, the effectiveness of classic models as well as of more advanced approaches must be carried out.

## Literature review

The first studies about the stock market appeared at the beginning of the previous century. One of the most influential papers was the paper of Fama & French [Fama, 1970], in which the "Efficient Market Hypothesis" was first introduced. According to this hypothesis, the financial market is efficient, which means that prices of assets already include all the available information about it [Fama, 1970, 1991]. Let me illustrate with an example. Suppose you somehow get to know that a company is planning to do a large buyout in a few days. Evidently, you go to the stock market to make a profit. However, you discover an interesting phenomenon: the price of the stock has already dropped, in anticipation of the price increase. This is a demonstration of the "Efficient Market Hypothesis" (EMH): the moment the information appeared, the stock price has almost momentarily reacted to it. It is important to state that the EMH does not imply the inability for one to make a profit with information. On the contrary, according to the EMH, every investor is skilled enough to quickly seize any opportunity that arises, indeed making a profit. However, as more and more investors join in on the fun, the profits to be made swiftly decrease to zero. Therefore, the market is not constantly efficient but rather is fluctuating between different efficiency states that emerge and disappear due to the behavior of investors [Lo, 2004]. There is another important consequence of the EMH: the futility of fundamental analysis (predicting returns using different factors). It is impossible to make a profit with the analysis of the past. The reason is two-fold. On the one hand, the state of the market is constantly changing, thus the use of past information (that explains the previous efficient state) is fruitless, as this information does not explain the current state. On the other hand, any information that can be gained using these systems is incorporated into prices with such a speed that by the time anyone collects enough

data to conduct fundamental analysis, the data collected would already be of no use.

Another important area of financial literature focuses on explaining pricing. William Sharpe pioneered this discipline in 1964 with his "Capital Asset Pricing Model" (CAPM). According to this model, the daily returns of a stock $i$ at period $t$ can be described by the following formula:

$$r_{it} = r_f + \beta_i \cdot \left(r_{mt} - r_f\right),$$

where $r_f$ is the risk-free rate (the returns from an asset that has zero market risk, is unaffected by market fluctuations, such as a government bond); $r_{mt}$ is the daily return of the market portfolio (a well-diversified portfolio of all market assets); $\beta_i$ is the beta coefficient of the stock, which shows how strongly the stock respond to fluctuations in the market. A beta coefficient greater than 1 means that the stock grows more than the market during upturns, but falls further during recessions, while a coefficient less than 1 implies the opposite: a more modest growth and a less drastic decline. The beta coefficient of 1 means that the stock moves just like the market, meaning it does not have a lot of undiversifiable risk. It is important to note that this version of CAPM is not the only one: weekly, monthly and even yearly returns can be used.

The CAPM model was derived from the idea that an investor will always choose some combination of a risk-less asset (the return of which is $r_f$) and a particular optimal portfolio that will maximize the investor's utility. It was proven that this portfolio would be the same for any investor, no matter what their utility function was [Markowitz, 1952; Tobin, 1958]. Sharpe took this idea further: if every investor wants the same portfolio, the price of the assets that make up this portfolio would go up (since the demand for them increases), while the price of assets that are not included in the portfolio will go down (since the demand for them decreases). This, in turn, will increase the return of assets which do not make up the efficient portfolio, and decrease the returns of those that do. As a result, a new efficient portfolio would be formed (with the new returns in mind), and the process would begin anew. Equilibrium is reached when there is a multitude of efficient portfolios generated (all made up of different assets, but where every possible asset is part of at least one portfolio), and the returns of which are linearly related to their risk. Sharpe then states that the price of the asset is determined not by the overall risk of the asset, but only by the undiversifiable risk (the risk of the efficient

portfolio that this asset is a part of). Assets that more sharply react to this undiversifiable risk will yield greater profits as they are less affected by individual risk factors, and the relationship between the undiversified risk and an asset's return is linear (and is described by the CAPM formula, the beta coefficient is the measure of this risk) [Sharpe, 1964]. Despite its shortcomings and flaws [Fama, French, 2004], the CAPM model is widely used today for a variety of purposes, from estimating cost of capital to predicting stock returns for portfolio management.

Machine learning in finance is a subcategory of the industry that is rapidly developing. Despite the EHM, many researchers have proven that machine learning (ML) is capable of successfully beating the market, giving investors more returns with less risk [Mintarya et al., 2023]. A Random Forest algorithm is one of the most popular choices. However, this academic area suffers from three major flaws [Strader et al., 2020; Kumbure et al., 2022]. Firstly, the studies mostly focus on the four major financial powerhouses: the USA, China, Taiwan and South Korea. These markets have detailed historical data, which makes them perfect for analysis. However, the findings on these markets cannot be generalized, and thus it is unclear whether ML will be effective in Russia. Secondly, most papers have weak theoretical bonds. They do not examine how well their results coincide with existing theory, especially the EMH. Thirdly, this field is heavily influenced by publication bias: most papers in which ML is ineffective never see the light of day. Furthermore, big tech companies that have the resources to conduct thorough research are not interested in making their findings public, as those findings give them a competitive edge. In my study I take these flaws into account.

The goal of this study is to answer the following question: is it possible to improve the accuracy of the theoretical daily CAPM model with a ML correction, and is it possible to improve the practical CAPM model with ML? The practical CAPM model is described by the following formula:

$$r_{it} = r_f + \beta_i \cdot \left( r_{mt-1} - r_f \right)$$

where $r_{mt-1}$ is the market daily return of the previous day. This practical model helps investigate the effectiveness of theoretical and modern methods for investors: is it possible to use present data to predict the future?

## Data & Methodology

For this study data was collected from official data sources, such as MOEX and the Central Bank. Only Russian public companies were examined. The analysis process is simple. Firstly, the predictions of the daily CAPM model $\hat{r}_{it}^{CAPM}$ were calculated for each workday $t$ for each company $i$ from January 2018 to December 2024. Then the difference between the actual daily return and the predicted daily return was obtained as $e_{it} = r_{it} - \hat{r}_{it}^{CAPM}$. After that, a Random Forest algorithm (for each day for each company an individual model was trained and used) was used to predict this difference ($\hat{e}_{it}$). Finally, the final predicted return was calculated as a sum of the prediction of the CAPM model and the predicted difference $\left(\hat{r}_{it}^{CAPM+ML} = \hat{r}_{it}^{CAPM} + \hat{e}_{it}\right)$. For the Random Forest model, the input parameters included exchange rates (euro, dollar, yuan, rupia, lira), bitcoin returns, oil prices, as well as Fama-French portfolio factors, Fama-French factors and market return.

## Results

*Table 1*

**Mean absolute differences for the theoretical model**

| | All stocks | Blue chips |
|---|---|---|
| CAPM | 0,016* | 0,016 |
| CAPM+ML | 0,017 | 0,013* |

* – 1% statistical significance
*Source:* compiled by author

Table 1 contains mean absolute differences. This metric shows the accuracy of the model: how close the predicted return is to the actual return. As can be seen in Table 1, the theoretical CAPM model is more accurate on the level of all stocks, while the ML corrected model is more accurate on the level of blue chips. Figure 1 shows mean accumulated returns. This metric evaluates the profitability of a strategy for an investor: what would happen if we held onto the stock when we predicted it to rise, and sold it if we predicted it to fall? As can be seen, the green line, which shows the mean accumulated return of the ML corrected model, is above the red line, which shows the mean

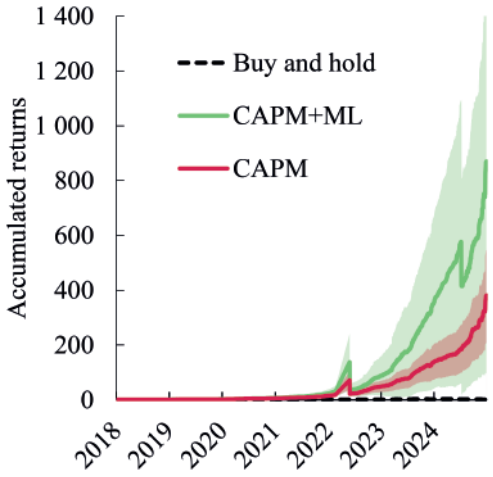


*Figure 1.* Mean accumulated returns for the theoretical model
*Source*: compiled by author

accumulated return of the raw model. However, the 95% confidence interval of the green line is very wide, thus it is impossible to say that the ML corrected model improves the mean accumulated return of the classical CAPM model. We can also see that the accumulated returns of the theoretical model are impressive, enabling one to multiply their investment by over 200 times over the course of 7 years. It is important to remember that these theoretical models are not plausible, as they use information that does not exist in the present. If we had information from period $t$, it would have been smarter to directly use the return of the stock at period $t$ to get the best possible outcome. Nevertheless, this result justifies using some kind of advanced ML algorithm to properly predict $r_{mt}$ using existing data, as an accurate prediction can lead to great profits. Overall, the theoretical model was not significantly improved by ML.

*Table 2*

**Mean absolute differences for the practical model**

| | All stocks | Blue chips |
|---|---|---|
| CAPM | 0,018* | 0,018 |
| CAPM+ML | 0,020 | 0,016* |

* – 1% statistical significance
*Source:* compiled by author

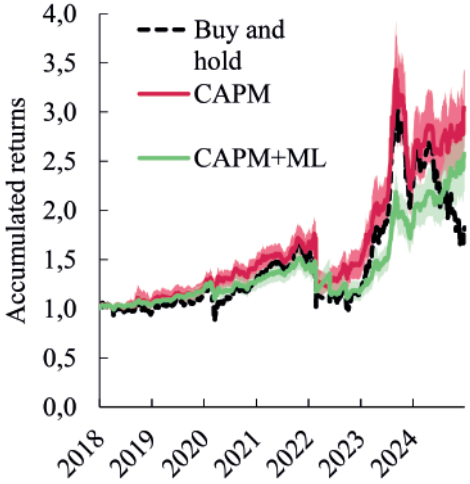


*Figure 2.* Mean accumulated returns for the practical model
*Source*: compiled by author

Table 2 contains mean absolute differences for the practical model. Again, the ML corrected model is more accurate only for blue chips. Figure 2 shows mean accumulated returns for the practical model. The green line never goes above the red line, which means that ML never improves the accumulated return of the CAPM model. It is also important to note that the practical accumulated return is much more modest than the theoretical one, equivalenting to about 17% annual return, which is about the same as the current key rate. This means that playing on the stock market using these strategies is unwise, as it is possible to get the same return with much less risk by putting your money on a bank deposit. Overall, ML was unable to improve the practical CAPM model.

## Conclusion

In conclusion, Machine Learning was unable to improve the predictive power of the CAPM model on the Russian stock market, neither in theory nor in practice. This result is coherent with the EMH: as more investors started using basic ML algorithms to outperform the market, the potential profits these algorithms could bring quickly diminished. In future studies more advanced methods should be tested.

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# Ai Trends for Digital Substations Cybersecurity

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**Abstract.** The paper examines the AI trends in the development of cybersecurity and changes in the landscape of threats to the sustainable functioning of electric power facilities. Despite significant achievements in the field of digitalization of the electric power industry, there remain serious challenges associated with growing threats and vulnerabilities that require an integrated approach to protecting critical information infrastructure facilities. The integration of information security technologies based on AI systems is believed to increase the stability of electric power systems. The most promising direction seems to be the development of decision support systems, with their subsequent integration with digital twins.

**Keywords:** cybersecurity, digital substation, critical infrastructure facilities, cyber-physical system, threat, machine learning, decision support system.

## Introduction

The digitalization of the electric grid complex increases information interaction both within and between the facilities of the electric grid complex, which together increases the vulnerability of electric power facilities to computer attacks (CAs). Thus, digital substations (DS) are connected to network management centers, however, not all such communications are secure. The transmission of measurements and dispatcher control commands creates risks of disruption of the stability

of not only individual facilities, but also entire sections of the electrical network.

## Expansion of the landscape of digital threats

In the review [Ene et al., 2023], the authors write about 45 CAs on energy facilities since 2017, 13 of them were recorded in 2022 alone. A brief overview of the incidents shows the figures of the damage suffered by the companies and the amount of data lost. At the same time, most of the attacks, information about which is available in open sources, used ransomware and social engineering methods. Since the beginning of 2017, S&P Global Commodity Insights has tracked 101 such incidents, with 23 and 26 such incidents occurring in 2024 and 2023, respectively (Figure 1) [Energy Security Sentinel An interactive study of geopolitical risk and energy prices. Retrieved May 5 2025, from https://www.spglobal.com/commodity-insights/en/news-research/special-reports/crude-oil/energy-security-sentinel].

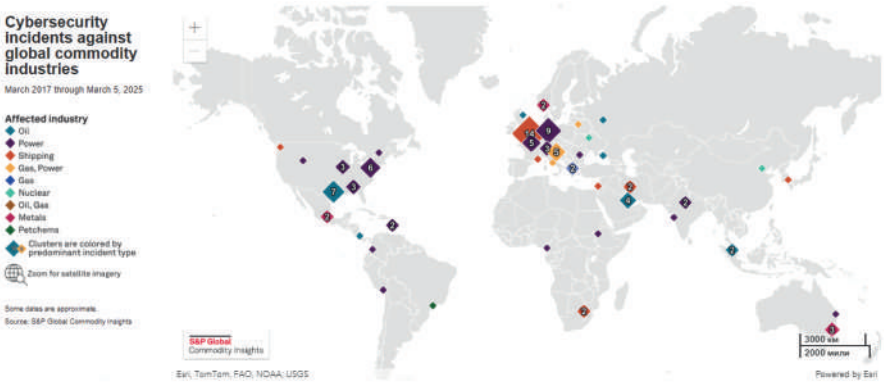


*Figure 1.* Geography of computer incidents related to energy facilities

In 2019, as a result of a ransomware attack on City Power, a major electricity supplier in South Africa, all their databases, applications and network were encrypted [Sande-Rios et al., 2024]. The attack disrupted the ability of prepaid customers to purchase electricity, which eventually led to power outages. The number of customers affected by this issue has exceeded 250,000. In February 2021, two of the largest Brazilian state-owned electric power companies, Eletrobras and COPEL, suffered from Dark Side ransomware programs that extracted 1,000

GB of data from the companies' systems [Ene et al., 2023]. As a result, both electricity suppliers were disconnected from the administrative grid for security reasons, so the electricity supply to the combined grid remained unchanged.

Another problem of ensuring reliability in the face of CAs is the lack of qualified cybersecurity specialists. Energy companies and governments have noted the need for cybersecurity specialists to protect critical infrastructure. Even if 5.5 million people were professionally employed in the field of cybersecurity in 2024, there is a shortage of another 4.8 million [2024 ISC2 Cybersecurity Workforce Study. Retrieved May 5 2025, from https://www.isc2.org/Insights/2024/10/ISC2-2024-Cybersecurity-Workforce-Study].

## Cybersecurity challenges and opportunities

Smart grid facilitates the production, distribution, transmission and management of electricity. Connected devices, according to the classification [Gotsev et al., 2022], transmit two types of data.

1. Personal data: information about users, consumption, logs and reports.
2. Operational data (directives): The current loads of the transformer feeder, branch switches, capacitors, fault locations and relay status are all determined by the operational data.

There are both similarities and differences between information technology (IT) and operational technology (OT) which digitalization unites. Technologies in operational environments include a number of different security constraints and requirements than those in information technology environments [Syrmakesis et al., 2024]. The main reason is that energy systems are cyberphysical systems and security incidents can cause both physical security incidents and power loss. Consequently, availability, authentication, authorization and data integrity in operational environments are typically more critical requirements than privacy.

Most CA are directly or indirectly related to the instability of the power grid. While CAs on the electricity generation sector are mainly based on False Data Injection Attacks (FDIA), the data transmission sector has been the victim of attacks based on physical access, such as time-delay attacks, load-shifting attacks, time synchronization attacks, load-altering attacks, false command attacks, and cyber-physical attacks [Tatipatri et al., 2024]. Most cyberattack vulnerabilities in the distribution

sector are based on network access, including MITM attacks, DoS attacks, replay attacks, and malware attacks.

## Classification of AI methods

Currently, researchers [Mazhar et al., 2023] identify two directions of AI development:

1. Data processing related (neurocybernetic) – data mining, machine learning;
2. Semantic representation of knowledge (logical) – semantic technologies, expert systems.

Machine learning (ML) is a class of AI methods, the characteristic feature of which is not the direct solution of a problem, but learning in the process of applying solutions to many similar problems. Relatively new intelligent forecasting methods, which are often based on learning methods, the use of which has become widespread with the growth of computing power of modern computer systems are of particular interest.

However, ML is just one of the AI method groups. Other broader ways to create AI systems are neural networks, expert systems, fuzzy logic, and natural language processing [Berghout et al., 2022]. Knowledge bases conduct semantic analysis in order to identify hidden dependencies and patterns and are used to create decision support systems (DSS). The advantage of DSS is that it allows to store not only factual information, but also inference rules, which makes it possible to automatically form conclusions about already known or newly introduced facts [Tupayachi et al., 2024].

## Challenges leveraging AI for cybersecurity

Artificial intelligence techniques have been applied in several applications that are crucial for the reliability and resiliency of an intelligent network. Even in this case, there are still some problems limiting additional applications of artificial intelligence methods. The main of these problems are data privacy and security, as well as the use of some artificial intelligence techniques as a "black box" to achieve a human-centered approach to developing artificial intelligence solutions [Sande-Rios et al., 2024].

In general, the existing methods of detecting CAs on cyber-physical production systems have the following disadvantages:

1. The cyber and physical levels are closely interconnected and interact with each other. Detecting an attack from cybernetics or physics alone is not enough;
2. Attack detection methods based on data from the physical electric power grid ignore the impact of CAs on the operation of smart grids;
3. CAs are characterized by unbalanced attack patterns, high data dimensionality, and noise, while long-tail data is common.

## Synthesis of AI methods for cybersecurity

Ontologies and knowledge graphs are fundamental elements in the field of the semantic web and knowledge management, providing structured ways to represent knowledge about the world. In recent years, there has been a tendency to explore the integration of Large Language Models (LLMs) and Retrieval-Augmented Generation (RAG) methods with knowledge representations.

In [Tupayachi et al., 2024] the authors have developed an integrated and automated methodology that leverages a pre-trained (LLM) to generate scenario-based ontologies and knowledge graphs from research articles and technical manuals. Their methodology utilizes the ChatGPT API as the primary reasoning engine, supplemented by Natural Language Processing modules and carefully engineered prompts. This combination enables an automated tool capable of generating ontologies independently.

The ontologies generated through AI-powered methods are interoperable and can significantly facilitate the design of data models and software architecture, particularly in the development of DSS for digital substations. Such DSS could be integrated with digital twins that represents one of the most transformative innovations in the field of engineering, simulation, and data analytics. At its core, a digital twin is a virtual replica of a physical system, process, or product that mirrors its real-world counterpart in a digital format [Bassey et al., 2024]. This digital model is continuously updated with data from its physical counterpart through sensors and Internet of Things (IoT) devices, allowing it to reflect real-time changes, conditions, and operation.

This real-time synchronization ensures that any changes in the physical system are immediately reflected in the digital model,

providing a precise and current representation at all times. One of the key advantages of integration of DSS with digital twins is their ability to simulate different scenarios. By applying various inputs and conditions, operators can predict outcomes, identify potential issues, and optimize performance. Such information can be used as data for ML system to generate knowledge bases. With adaptative response of DSS the digital twin not only mirrors the current state but also provides actionable insights to maintain reliability of DS in the face of computer attack.

## Conclusion

Thus, despite significant achievements in the field of digitalization of the electric power industry, there remain serious challenges associated with growing threats and vulnerabilities that require an integrated approach protecting critical information infrastructure facilities. The crucial role of DS in ensuring national security makes them an attractive target for hostile hackers. The integration of information security technologies based on AI systems can increase the stability of electric power systems. The most promising direction seems to be the development of DSS, with their subsequent integration with digital twins.

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# Modeling the Impact of Sustainable Development Strategy on Economic Growth

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**Abstract.** As sustainability becomes a key factor in economic policy and investment decisions, understanding its impact on economic growth is increasingly important. This report presents a novel methodology for constructing the ESG (environmental, social, and governance) index for developed and developing countries. We apply Lasso regression to select the most meaningful indicators for each group, followed by principal component analysis to aggregate them into a single variable for each ESG dimension. Subsequently, we employ panel regressions to assess the impact of the ESG index on economic growth in developed and developing countries. The results reveal significant differences in how ESG performance influences economic growth across country groups. The report highlights the necessity of a differentiated approach to sustainable development based on the level of economic development.

**Keywords**: sustainable development strategy, economic growth, the ESG index, principal component analysis, panel regression, macroeconomics.

## Introduction

The views of today's society have undergone some distortions that have shifted the focus to the future: the priority has become long-term development rather than profit maximisation. The concept of "long-term, sustainable development" suggests that economic prosperity can be achieved while addressing major environmental, social and governance challenges at the firm and country levels.

Modernisation of companies provides for transparency in management, care for the environment and people with whom the company comes into contact. Such a vector of development is called ESG-strategy (Environmental, Social and Governance). This strategy is based on solving the main problems of society, which is why it's otherwise known as "changes for the better that people expect". Thus, the key growth trajectory in developed and developing countries, which will lead to sustainable development, is the transition of the economy to the stage of "long-term development", realised by solving the problems of society.

Most companies have had to change their development strategies as the public has become interested in this concept and as "sustainable" transformation has been popularised, more investments have been received by firms that comply with the new policy: there has been an increase in ESG-financed investment flows from the state and the firms themselves. As a result, firms are forced to shift to a new development strategy, but are firms' output and output in the economy as a whole increasing? What happens to the prices of goods and services? Does ESG-transformation orientation not reduce economic growth?

## Channels of influence of ESG strategy on economic growth

The implementation of sustainable development strategies necessitates careful analysis of their impact on economic growth. This is crucial because economic performance directly influences key indicators like living standards and infrastructure development.

Economic prosperity fosters increased income and employment opportunities, stimulating investment that enhances production efficiency and mitigates poverty through job creation. Consequently, it's imperative that ESG strategies positively contribute to the economic landscape. Otherwise, pursuing long-term development could inadvertently lead to short-term recessionary pressures.

Several channels mediate the influence of sustainable development on economic growth:

- Technological Innovation: Adoption of innovative technologies enhances production efficiency and reduces emissions, driving economic advancement.

- Human Capital Development: Investments in health, education, and social well-being cultivate a more skilled workforce, leading to enhanced productivity and economic growth.
- Regulatory Framework: A supportive regulatory environment that incentivizes compliance with sustainable development standards fosters business confidence and stability, attracting investment and driving economic growth, particularly when ESG-compliant companies constitute a significant portion of the economy.

In essence, innovation, human capital development and a conducive regulatory framework are the key conduits through which sustainable development strategies contribute to positive economic outcomes.

## Theoretical and empirical frameworks

Sustainable development strategies, composed of intertwined yet autonomous economic, environmental, and social components, necessitate a nuanced analysis of their individual and collective impacts on economic growth.

Theoretical research largely posits a positive correlation between these components and economic growth [Jacobs, 2013; Cracolici et al., 2010; Hall and Jones, 1999; Alam et al., 2017]. However, certain studies suggest potential negative effects. For instance, the social component can be analyzed through envy theory [Schneider et al., 2010], while governance measures might inadvertently hinder growth [Howarth, 2012].

Theoretical analyses focusing on paired components reveal positive effects on economic growth rates. Combining environmental and social factors fosters a bidirectional relationship between economic and non-economic aspects, potentially leading to innovation, new firm networks, infrastructure development, improved healthcare, and reduced transport congestion [Jacobs, 2013; Cracolici et al., 2010]. Similarly, integrating the environmental and governmental components demonstrates positive impacts: Effective resource allocation, promotion of eco-friendly technologies and lower taxes for environmentally compliant companies contribute to this outcome [Alam et al., 2017; Jacobs, 2013]. The social and governmental components synergistically enhance worker productivity through a supportive social structure, leading to positive effects on economic development rates [Hall and Jones, 1999].

Studies suggest that while individual components may exhibit both positive and negative influences on economic growth, their combined effect tends to mitigate potential downsides. Notably, the environmental component exerts a significant influence on economic dynamics, both directly and indirectly through social and governmental channels.

Short-term empirical analyses indicate limited impact of sustainable development strategies (measured by ESG indices) on GDP per capita, except for Iceland and South Korea, which exhibit positive effects [Diaye et al., 2022]. However, long-term studies reveal a significant positive correlation between ESG indicators and economic growth rates [Diaye et al., 2022; Wang et al., 2023]. Notably, a country's ESG index is influenced by the performance of neighboring countries [Wang et al., 2023], underscoring the importance of regional cooperation.

In conclusion, sustainable development strategies, particularly in high-income nations with supportive neighboring countries pursuing long-term development, exert a positive impact on economic growth. Further research examining the specific impacts of sustainable development strategies on developed and developing economies is warranted.

## Constructing an ESG index and validating the research question

Nevertheless, most existing studies tend to first select metrics that allow assessing the effectiveness of economic policies in specific areas: for environmental policy — most often carbon emissions, for social policy — life expectancy and for governance policy — anti-corruption. However, there are many more indicators that reflect the states of these spheres. Therefore, this paper investigates the following aspects: the differences in key factors within each pillar of sustainable development for developed and developing countries are examined, the ESG index within each group is calculated and the impacts are assessed.

Research question: does the impact of sustainable development strategy on economic growth rates depend on the achieved level of economic indicators of countries? The calculations are based on World Bank data (71 environmental, social and governance indicators, 193 countries, for the period 1995 — 2020).

Based on economic status, countries are divided into developed and developing countries according to the International Monetary Fund

classification. Within the formed sub-samples, key indicators for each component of sustainable development [Bobylev, 2012] were identified: in each block, LASSO regression with within-group transformation was constructed and control variables were taken into account to check the correctness of signs. After obtaining significant factors in each component, the integral indicators, which are the projection of key variables on a univariate space, were calculated for each block, i.e. obtained by applying the method of principal components [Rubanov, 2014]. It should be noted that the number of significant factors for developed and developing countries, as well as the factors themselves, differ in each of the components of long-term development. The aggregated ESG-index is an analogue of the human development index in its construction: it is calculated as a geometric mean for the impossibility of compensating for the problems of one sphere by the good condition of another.

The basic model for assessing the impact of sustainable development strategy on economic growth is panel regression.

Regression equation:

$$y_{i,t} = \beta_0 + \beta_1 ESG_{i,t-1} + \beta_2 ESG_{i,t-2} + \beta_3 ESG_{i,t-3} + \\ + \beta_4 GDP\_per\_capita_{i,t-3} + B(L)c_{i,t} + \varepsilon_{i,t},$$

where $y_{i,t}$ — the growth rate of GDP per capita in constant prices (filter: moving average); $ESG_{i,t}$ — sustainable development index in country $i$ at periods $t-1$, $t-2$, $t-3$; $GDP\_per\_capita_{i,t-3}$ — GDP per capita in constant prices; $c_{i,t}$ — vector of control variables in country $i$ at time period $t-1$: inflation — consumer price index (%); gross fixed capital formation (% of GDP); openness of the economy (% of exports and imports of GDP); government expenditure (% of GDP).

## Conclusion

The results of the model show that the positive impact of ESG-index on economic growth of developed countries occurs with a lag of 1 year, and there are no negative effects in the future. However, in the case of developing countries, despite the positive impact of the ESG-index in the next period, there is a negative impact in the long run, which may be due to an insufficiently prepared economic environment for the transition to sustainable development (countries, depending on the degree of development, focus on solving different problems: for

developed countries, long-term problems are relevant, while developing countries focus on short-term challenges).

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# Communicative Imperfections of Machine Translation in Conveying Publicist Texts

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**Abstract**. The article studies how machine translation functionate in conveying Donald Trump's 2025 inaugural address and if the AI-based applications can replace a real human translation. The scientific novelty of the research lies in its comprehensive evaluation of the effectiveness of modern AI-based translation tools such as Google Translate, DeepSeek, and ChatGPT in capturing the linguistic and pragmatic features of a high-profile political speech.

**Keywords**: machine translation, artificial intelligence, linguistic and pragmatic failures, Donald Trump, inaugural address.

## Introduction

Words are a powerful tool in human communication, shaping perception, evoking emotions, and influencing behavior, as confirmed by psycholinguistics and cognitive science through the brain's "language network" [Barrett, 2020; Berger, 2023]. In today's globalized world, translating impressive speeches, like Donald Trump's 2025 inaugural address praised by Russian political scientist Igor Panarin [Internet, date of application: 18.05.2025] as a "stunning, phenomenal speech", is critical. The question is whether today machine translation is enough to do the job correctly or public speeches can be trusted to only linguists-cum-translators.

## Advantages of linguist-translators over machine translation

Our study focuses on today's ability of AI tools like Google Translate, DeepSeek, and ChatGPT to accurately translate public speeches, with Trump's speech being the case-study. The evaluation of the results is expected to pour some light on the question of a present day necessity to hire professional specialists to translate public speeches.

We translated Trump's full inaugural address [Internet, date of application: 18.05.2025] using Google Translate, DeepSeek, and ChatGPT, compared the results, and identified linguistic-pragmatic errors they made. Trump's oratorical success stems from his global savior image, effective communication, clear vision, teleprompter-free delivery, and strategic pauses.

Translations were assessed for stylistic accuracy (e.g., alliteration, gradation, irony) and meaning.

**Experience of using machine translation**
**Stylistic, syntactic and functional failures**

| | |
|---|---|
| **Original** | "And our top priority will be to create *a nation that is proud, prosperous, and free*". |
| **Google Translate** | И нашим главным приоритетом будет создание *гордой, процветающей и свободной страны.* |
| **DeepSeek** | И нашим главным приоритетом будет создание *гордой, процветающей и свободной нации.* |
| **ChatGPT** | Нашей главной целью станет создание *нации, которая гордится собой, процветает и остаётся свободной.* |

**Findings**: The obtained translations by Google Translate and DeepSeek did not fully achieve the effects of gradation, theme-rheme structure and the rhythmic flow of the sentence, as a result, they failed to have the intended impact. In the ChatGPT version, the successful theme-rheme structure is maintained, but the rhythmic flow of the sentence is disrupted due to the replacement of adjectives with verbs, and dynamism is reduced in the delivery of the nation's characteristics. As a result, the machine translation lost the original persuasive strength, impact on the audience and important communicative functions.

**Our translation**: Важнейшей целью для нас будет создание народа гордого, процветающего и свободного.

The stylistic device of the original is reconstructed, and its communicative function is preserved.

**Semantic errors and distortion of meaning**

| | |
|---|---|
| **Original** | "The vicious, violent, and unfair *weaponization of the Justice Department* and *our government* will end". |
| **Google Translate** | Порочное, жестокое и несправедливое *использование Министерства юстиции* и *нашего правительства в качестве оружия* прекратится. |
| **DeepSeek** | Порочное, жесткое и несправедливое *использование оружия Министерством юстиции* и *нашим правительством* прекратится. |
| **ChatGPT** | Жестокая, несправедливая и *политизированная деятельность Министерства юстиции* и *нашего правительства* прекратится. |

**Findings**: DeepSeek misinterprets "*weaponization*"; others are imprecise due to lacking context and extralinguistic knowledge (e.g., Trump's legal battles). To adequately convey the meaning of the phrase "*weaponization of the Justice Department*" into Russian, it is not enough to know the meanings of the individual words. It is necessary to take into account the personal career experience of the president. For political reasons, under pressure from the ruling Democrats, Donald Trump was repeatedly subjected to criminal charges for allegedly committed crimes, his home was searched, and dubious cases were initiated against him. Moreover, during the U.S. presidential campaign, an assassination attempt was made on Trump. Given these facts, it becomes clear in what context Trump refers to the Department of Justice and the U.S. government. DeepSeek provided a translation in which it suggests that the Department of Justice and the U.S. government use ***weapons*** to intimidate citizens, which contradicts the intended meaning of the statement. The translations by Google Translate and ChatGPT are more accurate, but they are still not perfect.

**Our translation**: С жестоким и несправедливым использованием Министерства юстиции… будет покончено.

The essence of the phrase is conveyed, and the meaning is clear.

**Stylistic failures and distortion of meaning**

| | |
|---|---|
| **Original** | "They don't have a home any longer. *That's interesting*. But we can't let this happen". |
| **Google Translate** | У них больше нет дома. *Это интересно.* Но мы не можем этого допустить. |
| **DeepSeek** | У них больше нет дома. *Это интересно*, но мы не можем позволить этому случиться. |
| **ChatGPT** | Теперь у них больше нет домов. *Это интересно.* Но мы не можем позволить этому продолжаться. |

**Findings**: All miss the irony of "That's interesting" regarding 2025 California wildfires (18,000+ homes lost).

After the large wildfires in Southern California in January 2025 over 18,000 homes and buildings were destroyed. Hundreds of people lost their homes. AI creates the impression that Trump finds it *curious* to observe how "the City of Angels" has turned into "Hell" due to the massive fires. However, this completely contradicts the original meaning, as Trump uttered the phrase *"That's interesting"* with irony.

**Our translation**: *Люди остались без жилья. Удивительно, не так ли?* Но мы не можем допустить подобное вновь.

In our translation the irony is captured through the rhetorical question.

**Pragmatic and communicative failures**

| | |
|---|---|
| **Original** | "*My recent election* is a mandate to *completely and totally reverse a horrible betrayal* and all of these many betrayals *that have taken place* and to give the people back their faith, their wealth, their democracy, and, indeed, their freedom. From this moment on, America's decline is over". |
| **Google Translate** | Мои недавние выборы — это мандат на то, чтобы полностью и окончательно *обратить вспять* ужасное предательство и все эти многочисленные предательства, *которые имели место*, и вернуть людям их веру, их богатство, их демократию и, конечно же, их свободу. С этого момента *упадок Америки закончился*. |
| **DeepSeek** | Мои недавние выборы *призваны* полностью *обратить вспять ужасное предательство* и все эти многочисленные предательства, *которые имели место*, и вернуть людям их веру, их богатство, их демократию и, *более того*, их свободу. С этого момента *упадок Америки закончился*. |
| **ChatGPT** | *Мой недавний переизбрание* — это мандат на полное и абсолютное *исправление* ужасного предательства и всех предательств, произошедших ранее. Это возвращение народу его веры, его богатства, его демократии и, наконец, его свободы. С этого момента *упадок Америки закончился*. |

**Findings**: Google Translate and DeepSeek misuse "обратить вспять"; ChatGPT has grammatical errors. Donald Trump's election as U.S. president in 2025 became the most discussed topic worldwide. As a result of the events that occurred to him, such as the unfounded criminal charges and the assassination attempt on his life, people came to realize the harsh truth and the importance of Trump on the global stage. People need Trump; his words give them hope and faith in a just future. The Google Translate version distorts the meaning of the phrase with the expression *«обратить вспять предательство»*. In Russian, according to lexical compatibility, «обратить вспять» can be used with time, but not with betrayal. A similar mistake is made in the DeepSeek translation. The ChatGPT version is better, though not perfect. Moreover, in the first sentence, there is an error in word agreement and case endings: *«М**ой** недавн**ий** переизбрани**е**»*.

**Our translation**: Моё недавнее переизбрание направлено на искоренение предательства… Америка вновь на подъёме.

**Distortion of meaning and breach of moral norms**

| | |
|---|---|
| **Original** | "We will not forget our country, we will not forget our Constitution, and we will not forget our God. *Can't do that*". |
| **Google Translate** | Мы не забудем нашу страну, мы не забудем нашу Конституцию, и мы не забудем нашего Бога. *Так нельзя*. |
| **DeepSeek** | Мы не забудем нашу страну. Мы не забудем нашу Конституцию, и мы не забудем нашего Бога. *Не можем этого сделать*. |
| **ChatGPT** | Мы не забудем нашу страну, мы не забудем нашу Конституцию, и мы не забудем Бога. *Мы не можем этого допустить*. |

**Findings**: Google Translate moralizes; ChatGPT is closest but improvable.

In this fragment Trump tries to unite the nation and reminds everyone of their shared responsibility. The Google Translate translation of the expression *"Can't do that"* takes on a moralizing tone: *«Так нельзя»*. DeepSeek provides a calque of this phrase, while ChatGPT offers the most accurate translation: *«Мы не можем этого допустить»* maintaining the structure of the previous sentence «Мы не забудем, и мы не допустим». Although the last phrase could be improved.

**Our translation**: Мы не забудем нашу страну… Это недопустимо!

In our translation the tone is maintained.

## Conclusion

As a result of the study, we have come to the conclusion that despite the rapid development of AI, machine translation – both stationary and neural – still fails to deliver high-quality translations. It should be noted that, overall, the translation of Trump's speech was well executed by the services, but there are significant shortcomings that result in the loss of rhythm and dynamics, distortion of meanings, and a diminished impact of the words on the target audience. Conclusion: at this point, machine translation is imperfect and requires professional review for high-stakes texts.

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