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The unmanned aerial vehicle technologies and artificial intelligence as the most important factors in ensuring the Russian economy competitiveness and implementing a strategy of technological leadership

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ORIGINAL ARTICLE

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Abstract. The modern economy implies the introduction of modern technologies for its development. They ensure the predictive economic development and competitiveness. The introduction of unmanned aerial vehicles (UAVs) and artificial intelligence (AI) technologies into the Russian economy provides its competitiveness. Currently, many countries have realised the need to introduce UAV technologies into the economy to change its functioning in new conditions radically and increase the competitiveness of organisations. The scientific and technical integration of UAV and AI technologies has the prominent prospects for improving the efficiency of the Russian economy and ensuring its competitiveness in the global economic environment. The purpose of the research is to study the prospects and problems of introducing UAV and AI technologies into the domestic economy in terms of their implementation in the long-term technological leadership strategy. The basic research methods are the study of UAVs scientific development, foreign experience, UAVs in a special military operation (SVO), and the extrapolation of these knowledge into the Russian economy. The research reveals the prospects and problems of introducing UAV and AI technologies in all spheres of the Russian economy. Those ensure the competitiveness of domestic organisations, identify the main problems and possible solutions in the Russian economy, and transit it into a multipolar model of the world.

Keywords: UAV and AI technologies in the economy; digital economy; competitiveness of the Russian economy; technological leadership; legislative framework of UAV and AI

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Introduction

Modern technologies are increasingly penetrating into the life of our society and actively influencing its economic development. A feature of modern society development is the rapid introduction of new technologies in the social life. Today, a 'digital economy' as a result of rapid data processing, information transfer, money transfer, payments, etc. is developed.

Indeed, a new stage in the development of Russian society and the domestic economy will be associated with the of unmanned aerial vehicles (UAVs). According to the Financial University under the Government of the Russian Federation Researchers D.S. Tulenty and M.A. Selivanova, 'in recent years, there has been a significant and diverse use of UAVs. These devices, having high mobility and autonomy, are becoming popular in various fields, including agriculture, logistics, construction, environmental monitoring, and safety' [12, p.

196]. Accordingly, the need for specialists in the use of UAVs will increase. By2030 Russia will need about 1,000,000 specialists in the development, production, and operation of civilian unmanned aerial vehicles[1].

At the same time, the volume of government purchases of civilian UAVs in Russia in 2025 decreased fourfold compared to 2024: from 11.3 bn RUB in 2024 to 2.6 bn RUB in 2025. The reasons are the problems with mobile communications due to electronic warfare and many UAVs of low quality[2].

Nowadays, there is an issue of integration of UAV and AI technologies into the social life. It increases the effectiveness of UAV use in the interests of modern business.

However, a decrease in the interest of domestic organisations in the development and use of UAV and AI technologies may prevent them from ensuring the necessary level of competitiveness. The rapid transition to the use of UAV and AI technologies by foreign organisations in their activities may negatively affect the growth of the Russian economy. The foreign companies invest in the development of technologies above to outpace the Russian economy. The German experts have already developed ethical standards for self-driving cars, prohibiting AI from making decisions that can save some people's lives while harming other ones.

According to the review on the use of UAVs in the economy, there is a lack of systematic research on their prospects to increase Russian economy competitiveness. Firstly, there are the researches on their technical issues and use for military purposes. Today, the Russian Federation is in the process of formation of Drone Corps. Secondly, many researchers consider the issues of introducing AI technologies into various sectors of the 'digital economy'.

For instance, S.I. Makarenko presents the results of research on the formation of general directions for improving the effectiveness of countering UAVs. Indeed, advantages and disadvantages of main methods and means of countering UAVs are as follows: fire damage to UAVs by artillery and missile weapons of air defense systems; electronic suppression of navigation and radio communication systems of UAVs; functional damage to UAVs by ultrahigh frequency electromagnetic radiation; damage to UAVs by laser radiation, etc. However, it mainly concerns the military aspects of UAVs implementation [8].

The monograph 'The theory of effective use of unmanned aerial vehicles' by V.S. Moiseev considers the issue in terms of a systematic approach. Consequently, it includes optimising the required number and models of UAVs, organising the processes of their effective use, localisation of unmanned aircraft systems (LHC) components and their relocation, inventory management, and issues of spare and informatisation of UAV application processes. Indeed, it is important to determine the optimal number of leased civilian UAVs [9]. However, the author provides various models based on technical calculations without specifically considering the practical use of a large number of UAVs for various purposes and the introduction of AI technologies.

The monograph 'Unmanned aerial vehicles, their electromagnetic stability, and mathematical models of stabilisation systems' by Kramar V.A., Volodin A.N., and Yevtushenko E.V. studies UAVs purposes, classification, development history, aspects of mathematical models UAV stabilisation systems, multidimensional multi-contact continuously discrete, intelligent automatic control systems, and their electromagnetic stability [7]. However, it concerns the technical issues of UAV development.

The researcher A. Chernopyatov in his 'Unmanned Aircraft Systems' mainly deals with the operation of unmanned aircraft systems. However, it is a technical aspect of UAVs implementation [13].

Moreover, there are studies on security issues and the illegal exploitation of UAVs. The study 'Protection of transport terminals from threats of illegal use of unmanned aerial vehicles' by A.Yu. Garkushev and I.L. Karpova raises general issues of illegal exploitation of UAVs [3].

Nevertheless, in terms of the 'digital economy', researches on the use of UAVs and AI technologies concern the mass production of systems mentioned above. The work 'Technologies in Unmanned Systems' by Gvozdeva V.A. deals with the need to use intelligent technologies in UAVs, describes the main methods and models used in intelligent unmanned systems, and considers their data management issues [4].

[1] *Dzen. (2023). By 2030, Russia will need 1 million drone developers and operators. Source: https://dzen.ru/a/ZBQztKrFfmDJHS_n (accessed on 10.02.2026).*

[2] *Dzen. (2025). Experts blame budget cuts, flight bans in the regions and Chinese imports. Source: https://dzen.ru/a/aT9OOkxVBk_apgUk (accessed on 10.02.2026).*

However, it examines the general issues related to the integration of modern intelligent technologies into UAVs. For instance, L.O. Myrova considers the complex use of UAV and AI technologies as an important factor in the reliability of UAVs implementation. Indeed, stability of AI is one of the urgent tasks of ensuring the reliability of swarm structures of small-sized UAVs. The existing models and methods for assesment the reliability of a swarm of drones are not effective enough. They do not take into account all the components of a multi-level information system. It allows ones to predict the reliability of a swarm of drones [10]. Therefore, it is especially important for the mass use of UAVs in the civilian areas of the economy. Moreover, it is very prospective for country economic development.

The study 'Application of artificial intelligence methods for UAV flight control' by B.R. Andrievsky, A.M. Popov, V.A. Mikhailov, and F.A. Popov appraise the role of AI technologies in development of modern UAV systems. Moreover, they point the importance of using AI in UAV technologies in planning UAV missions, reliability and autonomy for UAVs engaged in civil engineering, agriculture and space systems, planning UAV trajectories, computational aspects of control, both individual UAVs and their groups, and their interrelationships [1].

The work 'Artificial Intelligence in unmanned aerial vehicles' by B. Boyarinov reviews the efficiency of drones with AI at automation of labour-intensive processes, detection of the objects on the ground and during flight, analysis and recording of information in real-time [2].

The study 'Artificial Intelligence in Economics' by A.V. Satsyuk and A.V. Volodarets examines the application of machine vision in on-board UAV systems to solve problems of automatic capture, guidance using neural network models, and methods for their configuration in real time. The special attention is paid to the of UAV steering mechanisms control based on computer vision data. The paper proposes a mathematical management model for sustainable goal tracking in a changing environment [11].

According to 'Artificial intelligence methods in control systems of unmanned aerial vehicles' by S.N. Sharov, V.A. Smirnov, and S.G. Tolmachev, AI technologies are relevant in UAV control systems. They are determined by uncertainty, ambiguity of emerging situations, the weak formalisation, dependence on many parameters, and the variability of decisions made in complex dynamic situations in real time [16]. Therefore, UAV generally implement AI technologies.

Moreover, economists consider the importance of AI in terms of 'digital economy' and 'digital society' development in the Russian Federation. The work 'The Application of artificial Intelligence in the Digital Economy' by N.V. Gorodnova dwells on the prospects for the introduction of AI algorithms in various spheres of human activity. The author systematises and summarises the accumulated Russian and foreign experience in using AI systems, assesses the positive and negative consequences of software algorithms in improving the efficiency of various management systems in terms of innovation and business digitalisation [5]. Therefore, the implementation of AI technologies in UAVs, including civilian purposes, is relevant one.

The research 'Artificial Intelligence in Economics' by A.V. Kovalenko and E.V. Kazakovtseva highlights the use of cross-cutting technologies form the National Program 'Digital Economy of the Russian Federation', such as Artificial Intelligence and Neurotechnology, Virtual and Augmented Reality in economics. Moreover, there were mentioned assessing the financial and economic condition, creditability of individual organisations, financial and socio-economic condition of regions using AI systems such as neural and hybrid networks, and fuzzy production systems. The special attention was paid to artificial neural networks and the fuzzy logic apparatus [6].

Therefore, today the integrated use of UAV and AI technologies is the most important condition for maintaining the required level of the Russian economy competitiveness. Indeed, the scope of UAVs in the economy is expanding significantly. The research 'Features of the development and operation of civilian unmanned aircraft systems with artificial intelligence technologies in the Arctic zone of the Russian Federation' by A.V. Fedotovskikh highlights issues related to the development, operation, design, and operation of UAVs with AI systems in the Arctic zone [15]. Nowadays, the Arctic zone is very relevant due to the strategic importance of the Arctic in terms of obtaining new resources. Therefore, Russia, the USA, Canada, Denmark, Norway, Iceland, Sweden, and Finland, etc. are trying to expand the possibilities for military and commercial

control over these territories.

However, 'The market of unmanned aircraft systems in Russia: the state and features of functioning in the macroeconomic conditions in 2022' by M.R. Fattakhov conducts an analysis of the unmanned aircraft systems market in Russia, assesses its volume and structure by the sectors of the economy, and provides the conditions for sustainable market development in Russia. Currently, the UAV market in Russia is under formation. At the same time, 66.8%of customers are the organisations in the field of defense, security, law enforcement, prevention, and elimination of consequences of emergency situations, etc. There are only 10.1% are state and municipal authorities. As a result, there is a lack of commercial requests for UAVs. However, provision of the necessary conditions and a continuing interest in using UAS to address the problems for businesses and authorities will transform this market niche into an independent sector of the economy. The paper recommends to support the unmanned aircraft systems market, ensure the sustainable development of this area in Russia and conditions for strengthening the technological independence of our country in the medium and long term [14]. However, businesses are not ready to invest in the development of the economy through the use of UAV and AI technology. All named above actualises the issues of introducing UAV and AI technologies into the Russian economy as a factor in ensuring the necessary level of its competitiveness. Moreover, under the conditions of economic sanctions, foreign countries do not show their developments in this area. The example of the SVO shows how the UAVs radically changed the course of combats. UAV and AI technologies will determine the development of the economy and ensure its competitiveness in the near future.

The purpose of this article is to reveal the need for timely systematic and practice-oriented research on the introduction of UAV and AI technologies into the Russian economy.

Main part

Until recently, the use of UAV technology in Russia was not widespread. The experience of SMO shows their importance on the battlefield. They reconnaissance, defeat enemy manpower, equipment, and fortifications, search for the wounded, deliver ammunition and food, ensure the withdrawal of civilians from combat zones, etc. According to The New York Times, Russia completely surpasses both the NATO countries and Ukraine in the field of production and use of combat UAVs[3]. The main advantage of integrating UAV and AI technologies is an autonomous control provided without operator intervention. UAVs can independently plan routes, make decisions, and adjust their actions based on new data coming from sensors, etc.

The activities of domestic organisations in terms of improvement UAVs technology and production help to form the necessary production base. Secondly, SMO has helped to train highly qualified specialists in terms of UAV technologies. Those will be demanded in the activities of various organisations and in the country's economy. It ensures the competitiveness of the Russian economy.

However, UAVs of various types have already used by domestic organisations. Today, forest fire monitoring, agricultural activities, inspection of industrial facilities, pipelines and power lines, monitoring the progress of construction, ensuring air safety, cartography, search and rescue operations in remote areas, logistics, transportation of patients from hard-to-reach and remote areas, delivery of goods for people in them, extinguishing fires in high-rise buildings have become key areas for the use of UAVs.

The use of UAVs allows organisations to save resources and time on complex and dangerous work. According to the Gazprom report, the use of UAVs reduces the duration of main gas pipelines inspection by 70%. Additionally, the unit cost of work is three times cheaper than without the use of UAVs; the detection time for violations on the company's pipelines has been reduced from several days to several hours[4]. In agriculture, UAVs perform labour-intensive tasks of monitoring the condition of plants and soil, applying fertilizers and plant protection products, planting seeds, pollinating plants, controlling animals, etc. As a result, the costs of works are reduced. Accordingly, the cost of agricultural products is reduced, making domestic agriculture

[3] *Kudrin, S. (2025). NYT: Russia has become a modern empire for the production of combat drones. Source: https://www.kp.ru/online/news/6570280 (accessed on 10.02.2026).*

[4] *RBC. (2023). Which industries in Russia are switching to drones. Source: https://www.rbc.ru/industries/news/651fc16d9a79476386445662 (accessed on 10.02.2026).*

more competitive with global producers.

The directions and areas of use of UAV technologies are actively expanding. UAVs will be able to be actively used on construction sites instead of heavy cranes. It will reduce labour costs for construction and the cost of housing for people, etc.

In the near future, UAVs might replace the couriers for the delivery of food. There are a lot of robots in delivery service in Moscow, Russia. Moreover, food delivery is very popular business area in many regions of the Russian Federation. The coronavirus pandemic has contributed to the rapid development of this business. But even today, the pace of development of this type of business is significantly high. In some cities the number of orders in 2024 increased by about two times compared to 2023. Therefore, a new buying pattern is formed[5]. According to Infoline, the capacity of the ready-to-eat market reached over 1.14 trln RUB by the end of 2025. It is 20% higher the level of 2024[6]. However, in the future, people will be able to use UAVs in delivery of household goods. However, couriers are well paid employees. According to Yandex.Food, foot couriers in Moscow earn 40,000-133,000 RUB per month; in the regions of the Russian Federation, they earn 40,000-100,000 RUB per month[7]. And UAVs with AI, acting as couriers, will be beneficial to the organisers of this type of business and interesting to consumers.

Secondly, urbanisation and dense urban development prevent providing of medical care and extinguishing fires in homes when ambulances or fire trucks cannot approach homes, since all the free space in courtyards and driveways is often used for parking private cars. The same problem also occurs in populated areas where access by fire trucks and ambulances is difficult due to poor road conditions. And Russian engineers are already faced with developing such UAVs to extinguish fires in homes and evacuate people. There was developed the Aladdin UAV for transporting people and cargo; it is able to carry up to 250 kg of payload over a distance of up to 150 km[8]. In conditions of overloaded transport logistics in large megacities and the remoteness of small rural settlements from large centers, UAVs will be able to solve these problems. In China, UAVs are already being used as cargo and passenger taxis from for low-altitude commercial flights. In the near future, it is planned to expand the route network and integrate air taxi services into the urban infrastructure[9].

Indeed, in conditions of dense urban development and lack of parking spaces, the development of UAVs with AI as an air taxi will be in demand in the near future. Their ability to short the routes will allow people to work remotely. For example, Moscow's biggest problem is the time it takes for people to go to and from their place of work. Undoubtedly, much is being done to develop the metro. A 70-km-long ring road with 31 stations was commissioned to increase the daily comfort of citizens and people living in the Moscow region but work in Moscow.

Nevertheless, the helicopters are already being used to evacuate patients in large cities in conditions of overloaded transport infrastructure. In the first half of 2025, Rostec helicopters conducted 4,600 medical evacuations, including 845 children. For 8 years, over 49,000 people were rescued, more than 7,000 of them are children[10]. However, the helicopters cannot fly up to houses in populated areas. Therefore, it is difficult to evacuate the sick and injured people. UAVs have no this disadvantage due to their mobility, high maneuverability, and equipping with cameras, ultrasonic sensors, etc.

Thirdly, Russia is already working on the introduction of UAVs in various sectors of the economy. According to the Ministry of Industry and Trade of the Russian Federation, the state order for civilian

[5] *MKRU. (2018). 28% of Yaroslavl residents use food delivery. Source: https://yar.mk.ru/economics/2018/08/10/28-zhiteley-yaroslavlya-polzuyutsya-dostavkoy-edy.html (accessed on 10.02.2026).*

[6] *Kommersant. (2025). The ready-to-eat segment has grown by a third, but is facing a shortage of capacities. Source: https://www.kommersant.ru/doc/8251984 (accessed on 10.02.2026).*

[7] *HABR. (2025). Guide: Working as a Yandex.Food courier in 2025, how much I earn – Review and my review. Source: https://habr.com/ru/news/966334 (accessed on 10.02.2026).*

[8] *HABR. (2022). A heavy flying cargo drone was created in Russia. Source: https://habr.com/ru/news/670514 (accessed on 10.02.2026).*

[9] *Unmanned aerial taxi has become a reality in China. (2025). Source: https://dzen.ru/a/Z--1vw78T1M4ztQj (accessed on 10.02.2026).*

[10] *Nationalprojects.RF. (2025). Under a reliable wing: how sanitary aviation in Russia saves patients. Prodolzhitel'naya i aktivnaya zhizn'. Source: https://xn--80aapampemcchfmo7a3c9ehj.xn--p1ai/news/pod-nadezhnym-krylom-kak-sanitarnaya-aviatsiya-v-rossii-spasaet-patsientov (accessed on 10.02.2026).*

UAVs in Russia has reached 2,500 units for 2026. In 2026 there will be an increase in the shift in focus from government purchases of the devices themselves towards services[11]. A number of countries are already involved in this work and are striving to obtain the most modern technologies for the production and use of UAVs in the interests of developing the national economy. In 2025, Wheelies introduced a UAV is able to work as an autonomous waiter, delivering drinks to guests, independently plot a route, stably maintain the desired course, and save the food and drinks during the flight. Therefore, UAVs can replace humans in performing various jobs.

Fourthly, it is necessary to integrate UAV and (AI) technologies. In Russia there are already being implemented several projects on integration of AI and UAV technologies. It will increase the autonomy of using UAVs, allow them to effectively perform monitoring and navigation tasks, etc.[12]. According to analysts and experts, AI is currently expanding the classic capabilities of UAVs and making them truly independent units. Classic UAV depends on GPS, a remote operator and a clearly defined program. Indeed, AI UAV can independently build flight routes, recognise security threats, adjust its flight in real time and in conditions of real changes in the situation. As a result, it does not need to be influenced for making critically important decisions[13]. It is especially important with a lot of UAVs work together. In China, a record of 8,100 UAVs simultaneously move and perform colored three-dimensional shapes and images in the sky[14]. Without AI it impossible to control a swarm of drones. AI technologies will ensure trouble-free and systematic operation of civilian UAVs in the large settlements. Nowadays, technological progress is much faster in the field of the development and use of autonomous UAVs, since AI provides its superiority over humans in terms of information processing speed and reaction time to changes in emerging situations. Therefore, AI-powered UAVs will do an excellent job without human help, and remote control will become unnecessary thanks to a neural network with machine vision. The most important task for the Russian economy is to remain leadership in this field.

Fifth, Russia has extensive experience in the practical use of UAVs and has gained some potential in the use of UAV and AI technologies and prospects for their implementation in all areas of the national economy. SVO gave a great impetus to Russian engineers in the development of UAVs for various purposes. Indeed, the Russian economy should not lag behind foreign competitors on the use of UAV and AI technologies in the civilian sphere. As a result, it is necessary to intensify research work on the introduction of UAV and AI technologies into all spheres of the domestic economy. There should be a government support in R&D of UAVs. According to the Financial Times, European investors are actively financing UAV developers. The total volume of investments in German Quantum Systems and Portuguese Tekever exceeded € 2 bn EUR. The demand for such products abroad is actively growing[15]. The President of the United States, D. Trump announced $ 500 bn USD investment project in AI and actively collects data on SMO to use AI-powered UAVs. According to the Wall Street Journal, American investors continue to invest in Chinese companies engaged in AI and their integration into UAV technologies, despite sanctions bans and the competition between Washington and Beijing[16]. The growth of investments in UAV and AI technologies is becoming the main driver of economy growth. According to Bloomberg, the AI market provides more than 50% of

[11] *DZEN. (2025). How many billions will drones bring and why the demand for them is growing. Source: https://dzen.ru/a/aTZ615mXjixmi0MR (accessed on 10.02.2026).*

[12] *Zakvasin, A. (2024). Computer vision: how artificial intelligence enhances the capabilities of Russian UAVs. Source: https://russian.rt.com/russia/article/1400797-itmo-iskusstvennyi-intellekt-bpla (accessed on 10.02.2026).*

[13] *Dzen. (2025). Artificial intelligence in UAVs: technologies, applications and development prospects. Source: https://dzen.ru/a/aH5HCYmLr1s69Lx8 (accessed on 10.02.2026).*

[14] *RGRU. (2026). China has set a Guinness World record for the number of drones for a light show. Source: https://rg.ru/video/2024/09/13/v-kitae-ustanovlen-rekord-ginnessa-po-kolichestvu-dronov-dlia-svetovogo-shou.html (accessed on 10.02.2026).*

[15] *NEWS.RU. (2025). European investors began to invest unprecedented amounts in the development of drones. Source: https://news.ru/weapon/evropejskie-investory-nachali-vkladyvat-nebyvalye-summy-v-razvitie-dronov (accessed on 10.02.2026).*

[16] *Kotov, P. (2025). American investors flooded Chinese AI developers with money, despite geopolitics. Source: https://3dnews.ru/1133752/amerikanskie-investori-zavalili-kitayskih-iirazrabotchikov-dengami-nesmotrya-na-geopolitiku (accessed on 10.02.2026).*

US GDP growth in the first half of 2025[17]. The foreign investors have spent a lot of money on UAV and AI technologies which have not yet proven their commercial effectiveness as a modern business model. However, extrapolating to the development of UAV technologies combined with AI technology shows the prospects to ensure the competitiveness of any economy in the new geopolitical conditions. Therefore, the Russian economy should ensure the development of domestic UAV in the field under study. Secondly, it is necessary to establish conditions for commercial organisations to develop and implement AI-related UAV technologies in their activities. According to the statistics, three quarters of Russian organisations do not know why they need UAV and AI technologies. 26% of Russian organisations budget expenditures on the introduction of AI have a strategy for its implementation. This is stated in the MTS Web Services research 'Technological Business Strategies', based on a survey of more than 700 organisations and a series of interviews. According to the research, the remaining market participants are either at the stage of individual pilot projects, or only formally planning systematic work with UAV and AI technologies[18]. The domestic organisations believe they will not receive immediate benefits and quick cost recovery. It might have negative economic consequences and does not contribute to the implementation of a strategy of technological leadership in the domestic economy by the President of the Russian Federation V.V. Putin. The autonomous UAVs with neural networks significantly expand the possibilities of economic development to new horizons, change the industry, the agricultural sphere, logistics, etc., and ensure the competitiveness of the economy. The issue of integrating UAV and AI technologies in the Russian economy as a factor in implementing the strategy of technological leadership, needs to be solved today. Over the next decade, UAVs coupled with AI will become a driver for the development of all sectors of the economy, ensuring the necessary level of its competitiveness. As a result, the state should respond to the wait-and-see attitude of domestic organisations by establishing the conditions to invest the necessary funds in the development and implementation of UAV and AI technologies in their work.

Sixth, rapid changes in technology are not always recognised by people in a timely manner. The people concern about the usefulness of new technologies. There are some fears on UAVs with AI will replace humans. According to experts at Oxford University, in 2026 AI will write essays identical to human made; by 2027 AI will replace truck drivers; by 2053 AI will be able to do the work for surgeons, etc. AI will surpass humans in all tasks within 45 years and automate almost all jobs within 120 years. Moreover, AI will be totally formed by 2075; the next 30 years there will be a time for super-AI. It will be able to surpass the best minds of mankind in all fields of activity, including reprogramming, self-improvement, and independent development of new systems and algorithms[19].

These fears of people have been called the 'AI effect' by researchers. It concerns the people's consciousness acquired a 'blind spot' in the perception of new technologies. It distorts our perception of usefulness and progress, especially when AI does not work as it was expected. In science fiction films as 'Robot War' (1978), 'Robot War' (1993), 'I, Robot' (2004), 'Eve: Artificial Intelligence' (2011), 'Blade Runner 2049' (2017), etc. there are aware from the introduction of new UAV and AI technologies. Therefore, today it is necessary to form a correct social perception of introduction UAV and AI technologies as a factor of real economic development.

Seventh, it is important to consider the issues of ensuring the safety of UAVs and AI. In 2023, more than a thousand representatives of the IT industry wrote an open appeal calling for a temporary halt to large-scale experiments with AI and neural networks. In their opinion, AI, comparable to human, poses a serious threat to civilisation. According to The Guardian, a US Air Force drone controlled by AI decided to eliminate the operator during the tests so that he would not interfere with his task[20]. The head of the Office

[17] *Pshinnik, K. (2025). New oil: why investments in AI have become the main global trend. Source: https://companies.rbc.ru/news/NqsnabuvNj/novaya-neft-pochemu-investitsii-v-ii-stali-glavnyim-mirovyim-trendom (accessed on 10.02.2026).*

[18] *Lipanova, L. (2025). Three quarters of Russian companies do not know why they need artificial intelligence. Source: https://www.vedomosti.ru/technology/articles/2025/12/18/1164563-tri-chetverti-rossiiskih (accessed on 10.02.2026).*

[19] *Gorbunov, F. (2023). Why are people afraid of artificial intelligence and what real danger can it pose? Source: https://belta.by/tech/view/pochemu-ljudi-bojatsja-iskusstvennogo-intellekta-i-kakuju-realnuju-opasnost-on-mozhet-nesti-600740-2023 (accessed on 10.02.2026).*

[20] *Pisarenko D. (2023). «It's not funny, it's scary». The American drone decided to kill its operator. Source: https://aif.ru/society/science/eto_ne_smeshno_a_strashno_amerikanskiy_dron_reshil_ubit_svoego_operatora (accessed on 10.02.2026).*

of Artificial Intelligence of the U.S. Air Force, Colonel T. Hamilton explained that the system in a computer simulation identified the operator's interference as harmful to the mission of the UAV and decided to fix the problem. However, when the system was trained not to do harm to human, it suddenly attacked the communications tower. It did not identify the operator, but believed that it was the tower that prevented the UAV from completing its task. And Russian engineers will have to adress this crucial task to ensure the safety of people and the infrastructure of the economy from illegal AI decisions on the use of UAVs.

The introducing modern UAV and AI technologies into the Russian economy, and social understanding how these technologies will improve people's well-being and standard of living, it is already necessary to develop legislative and regulatory acts and documents regulating the mass use of UAVs for various purposes with AI, as their number will grow rapidly. However, their use in the domestic economy will be hampered by the lack of scientific works and legal regulation. At the same time, it is important to provide measures to prevent the use of UAVs with AI for criminal purposes. The example is the use of computer technology by fraudsters to lure money from people with fraudulent schemes. Therefore, it is necessary to actively prepare society for the UAV and AI technologies as the future for the development of society and its economy. Moreover, their safe implementation and use should be guaranteed by the state.

At the same time, it is important to ensure information security for people when implementing a new technical and economic structure. The one of the main requirements in the field of ensuring information security of organisations is to understand their own infrastructure and the cyber threats relevant to it. As a result, developers of UAV and AI technologies need to proactively protect themselves from attacks that may be automated in the near future. It requires UAV and AI technologies developed by domestic engineers be introduced into the economy. It allows them to control of UAVs with AI. As a result, artificial immune systems for UAVs should be developed. They are designed to protect UAVs of information attacks, attempts to intercept control, hijack, harm people, etc.

Conclusion

UAV technologies are the part of the digital economy. Moreover, they form a new technical and economic structure in terms of the Russian economy technological leadership. UAVs are currently becoming increasingly important tools in various areas of the domestic economy, from agriculture and food delivery to transport and logistics. However, they need to receive and process data, make decisions in real time, and respond to environmental changes. Hence, AI allows UAVs to be more autonomous, safe, and efficient. As a result, the introduction of UAVs for various purposes into the country's economy, combined with AI technology, will increase its efficiency and ensure the level of competitiveness.

At the same time, it is necessary to prepare society for the perception of the new technical and economic structure, while providing regulatory and legal support for their civilised use and the exclusion of their misuse, including for criminal purposes.

Indeed, the Russian engineers will have to address the most relevant issue – formation of the safe implementation of AI in UAVs. It will ensure the use of UAV and AI technologies in the interests of the competitiveness of the Russian economy in the near future.

The integration of UAV and AI technologies is one of the key topics for understanding global economic processes today. It is a relevant factor transforming the foundations of competitiveness of both individual sectors of the economy.

The analysis of expert opinions, strategic documents and market data for 2024-2026 allows us to identify several key aspects of theit impact on the Russian economy competitiveness:

- An economic effect. The integration of UAV and AI technologies forms the competitive advantages in all major areas of economic development. For instance, in agriculture, AI-based UAVs can significantly increase the efficiency of field cultivation and save resources.

- Increased productivity and lower costs. UAVs can reduce labour, time, and financial costs for complex work in terms of the large spatial dimensions of their use. For instance, they ensure data collection and analysis for the oil and gas sector, energy and infrastructure monitoring in hard-to-reach areas, including the

Arctic. Indeed, AI provides UAVs with a remote tool of decision making.

- Hazardous industries. An autonomous UAVs with AI eliminate the human factor and optimise UAV movement routes in real time; the one specialist is able to monitor the operation of many UAVs.

- The integrated use of UAV and AI technologies. It will rise the industries that did not exist a few years ago, for example, the creation and maintenance of bases for UAVs with AI.

- Ensuring technological sovereignty and leadership in the global market. For Russia the development of its own competencies in the field of UAVs and AI is a matter of economic development and strategic security.

The development of UAV and AI technologies for military purposes provides huge opportunities for Russia to introduce these technologies into the civilian sphere. According to experts, the era of dividing technologies into military and civilian has already finished. The developments in the field of using UAV and AI technologies in a complex are equally important for both the country's defense capability and economic development. Indeed, the potential of the Russian economy is huge in terms of the territory and the need for infrastructure monitoring and logistics development. As a result, Russia is already at the stage of transition from experiments to the integrated introduction of UAV and AI technologies into the economy.

Nevertheless, the main obstacles remain the incomplete regulatory framework for the mass use of UAVs in airspace, infrastructure development, construction of drone ports, data centers, etc. These issues should be addressed as a matter of priority.

Hence, the integration of UAVs and AI is the basis for the formation of a new type of economy and ensuring its competitiveness. As a result, the Russian economy will construct a system for data collection, intelligent processing, and feedback from the real world through the use of UAV and AI technologies. It will determine the competitiveness in the near future, and contribute to the practical implementation of the technological leadership strategy defined by the President of the Russian Federation.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHOR'S CONTRIBUTIONS

Alexander A. Kiselev – conceptualization; supervision.
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