CHAPTER IX. ARTIFICIAL INTELLIGENCE AND THE TRANSFORMATION OF THE GLOBAL ECONOMY

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Abstract. Artificial intelligence is becoming one of the key factors determining the development of the global economy in the 21st century. Its implementation in various fields of activity leads to significant changes in production processes, business management and customer interaction. Studying the impact of Al on the global economy is the main goal of this study. This study analyzes new research papers from 2021-2025 on the development of Al and data from the World Bank on the development of the digital economy. The research methodology is based on comparative quantitative and qualitative data mining. In the modern world, the leaders in the number of patents are China, the USA, Japan, and South Korea. According to forecasts, these countries will continue to lead in the development of Al. The development of AI will contribute to the creation of new innovative products, such as cloud computing and process automation, which opens up new opportunities for exports. In the future, AI can improve the efficiency and quality of services in the digital economy, making them more competitive in the global market.

Keywords: Al, world, digital technologies, innovations.

Introduction. The impact of artificial intelligence (AI) on the global economy raises a number of serious problems. One of the most talked about is automation, which can lead to job losses in various industries, as AI is able to perform tasks faster and more efficiently than humans. This, in turn, could exacerbate global social inequality and increase unemployment. In addition, AI contributes to the concentration of wealth in the hands of a small number of companies and individuals who have the technology to develop and implement it. This can lead to an uneven distribution of resources, both within countries and internationally. The emergence of new technologies also requires

new skills, and many workers may not be ready for these changes, creating a shortage of skilled workers in some areas and a surplus in others.

Al's profound impact on the global economy encompasses a wide range of implications and projections. These technologies are becoming a catalyst for significant economic development and scientific progress. The transformative power of Al technologies, in particular, significantly increases productivity in all areas of activity, promotes innovation and global development. The impact of Al is particularly pronounced in the healthcare, finance, and manufacturing sectors, where smart systems streamline processes and stimulate creative thinking (Abbas Khan et al., 2025). Artificial intelligence has complex social and economic effects that can no longer be ignored (Wang et al., 2024).

The integration of Al into everyday life and the global economy has become a reality. Today, Al is paving the way for new industries and consumer devices. This situation represents a turning point in the history of human civilization. Although the exact effects of Al's impact remain uncertain, they have significant potential to significantly change the development of the global economy (Gowda, 2023; Gowri et al., 2025).

Literature Analysis and Problem Statement. In today's environment, when digital transformations affect the economy, there is a unique opportunity to transform business processes, as well as significantly increase productivity and create new products (Maslak et al., 2021). The emergence of Al has significantly transformed global business, promoting operational efficiency and innovation (Menzies et al., 2024).

Artificial intelligence has the potential to significantly drive global development and potentially add up to 16%, or roughly $13 trillion, to the global economy in 2030. In the coming years, at least 70% of companies worldwide will integrate Al in some form. The rapid adoption of Al technologies will undoubtedly have profound implications for business and the economy. Companies that use Al will gain a competitive advantage in their fields of activity (Banerjee et al., 2023).

Today, Al represents a powerful innovative driver of productivity and economic growth. These technologies can increase business efficiency in the global economy and

significantly improve the decision-making process by analyzing large amounts of data. However, at the same time, this creates equally serious risks of labor market polarization, growing inequality, structural unemployment, and the emergence of new undesirable industrial structures on a global scale (Trabelsi, 2024). The big data economy is merging with artificial intelligence, whereby traditional statistical economics is gradually transforming into an intelligent economy (Wang & Zhao, 2022). Artificial intelligence will be the leading area that will allow consumers and businesses to get the most out of the digital economy, which will significantly change the world and will be used everywhere in the economy (Abbasov & Rzayev, 2023). Artificial intelligence digital technology today is moving from chips, sensors, and algorithms to innovative platforms and intelligent applications (Shan et al, 2023).

In the current global conditions of environmental degradation and lack of resources, the pursuit of sustainable development has become the leading goal of the world community. One promising way to achieve this goal is to use digital technologies that can rid economic growth of its carbon footprint. Al technologies can play an important role in the green transition of the global economy (Hong & Xiao, 2024).

At the current stage of the development of the Al civilization, as an open new shared technology, represents a significant advance in productivity and is a critical force capable of driving economic development. However, it also inevitably entails many potential risks and societal challenges (Shen & Zhang, 2024). These issues have many gaps and are still poorly studied. Therefore, the study of the impact of Al on the world economy is an urgent goal of this study. This study analyzes new research papers from 2021-2025 on the development of Al and data from the World Bank on the development of the digital economy. The research methodology is based on comparative quantitative and qualitative data mining.

Research Results

The use of AI raises many ethical and legal issues, such as liability for errors, algorithm bias, and protection of personal data, which creates additional risks for business and the economy as a whole. Large companies can adapt faster to new technologies by using AI to improve their competitiveness, making it difficult for small

and medium-sized enterprises to survive and negatively impacting economic diversity and innovation.

Global competition in the digital economy and Al technologies is intensifying. Countries that adopt AI faster gain a significant advantage in the economy. In the future, this situation may lead to economic and geopolitical conflicts. The development and use of AI requires significant computational and energy resources. This can increase the carbon footprint and negatively impact the environment. All these aspects require careful analysis and the development of strategies to minimize the negative consequences associated with the introduction of AI in the global economy. The rapid spread of Al is due to the fact that this technology contributes to the automation of routine tasks and allows companies to increase efficiency and reduce costs. For example, in the manufacturing sector, the use of robots and intelligent control systems can significantly optimize production lines, reducing the time to complete operations and minimizing the number of errors.

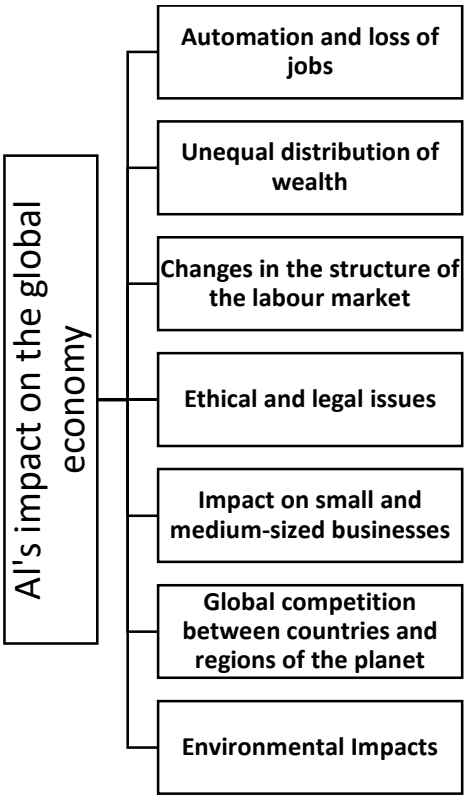
With the growth of the global Al market, the global economy will undergo significant changes that will affect all aspects of business, labor, and consumption. These changes will be both positive and negative, and their effects will be felt for many years to come.

First, one of the most noticeable changes will be the transformation of the labor market. This will lead to job cuts in some industries, such as manufacturing, logistics, and even services. However, at the same time, new professions will appear that require skills in working with Al and data analysis. Workers will be forced to adapt, mastering new technologies and improving their skills.

Secondly, Al will contribute to the creation of more efficient business models. Companies will be able to use algorithms to analyze consumer behavior, allowing them to offer more personalized products and services. This will lead to increased competition and improved product quality, as companies will strive to meet customer needs at a higher level.

The third important aspect is the impact of Al on global supply chains. Al's digital systems will be able to optimize logistics, predict demand, and manage inventory. This

will lead to lower costs and increased delivery speed. In turn, this will make international trade more efficient and accessible. The main factors influencing Al on the global economy are presented in Figure 1.



Source. Author's own development

Fig. 1. Multidimensional Model of Al Influence in the Modern Global Economy

One of the most talked about issues is automation, which can lead to job cuts in various industries. Today, AI is already able to perform tasks faster and more efficiently than humans, which can lead to unemployment and increased social inequality.

The unequal distribution of wealth is another reason to fear the development of AI. These processes could potentially contribute to the concentration of wealth in the hands of a small number of companies and individuals who have the technology and resources to develop and deploy AI.

The development of Al also leads to a change in the global structure of the labor market: The emergence of new technologies requires new skills, and many workers

may not be ready for these changes. This may lead to a shortage of skilled personnel in some areas and a surplus of workers in others.

Ethical and legal issues also arise: The use of AI raises many ethical and legal issues, such as liability for errors, algorithm bias, and the protection of personal data. These issues can create additional risks for businesses and the economy as a whole.

The impact of Al on small and medium-sized businesses has not been sufficiently studied: Large companies can adapt faster to new technologies and use AI to increase their competitiveness. This can make it difficult for small and medium-sized enterprises to survive, negatively impacting economic diversity and innovation.

The growth of the Al market will increase global competition. Countries that adopt AI faster can gain a significant advantage in the global economy. This can lead to increased competition and even economic conflicts between states and regions of the planet.

According to UNCTAD and IMF, the global AI's technology market will reach $4.8 trillion in the near future. This could affect 40% of jobs worldwide, increase productivity growth. A side effect of automation will be the reduction and relocation of jobs. The benefits of Al-based automation often favor capital rather than labor, which can increase inequality and reduce the competitive advantage of cheap labor in emerging economies (Georgieva, 2024)

With the growth of Al, there will be significant changes in innovation and scientific research. For example, in medicine, Al can help develop new drugs by analyzing vast amounts of genetic information and predicting which molecules might be most effective. This will not only speed up the development process, but also reduce research costs.

In addition, Al will promote the development of new industries and technologies. For example, areas such as autonomous vehicles, smart cities, and the Internet of Things (IoT) will be actively developed thanks to the introduction of Al. This will create new jobs and business opportunities, as well as improve the quality of life of people, making cities safer and more livable.

On the other hand, the growth of Al can also lead to an increase in dependence on technology. Companies and states relying on Al for decision-making may face risks associated with algorithmic errors or cyberattacks. This highlights the need to develop robust security systems and transparent algorithms that can minimize risks and ensure user trust.

This can help address environmental issues such as climate change by optimizing resource use and reducing emissions. For example, Al systems can analyze energy consumption data and suggest more efficient ways to use it, leading to a lower carbon footprint.

Equally important will be the impact of Al on global economic relations. Countries that can effectively integrate Al into their economies will gain a competitive advantage in the international arena. This may lead to a change in the balance of power in the global economy, where countries with advanced technologies will dominate, while others may be at a disadvantage. how the leadership of countries in the field of high technology and scientific research is changing (Table 1).

Table 1.

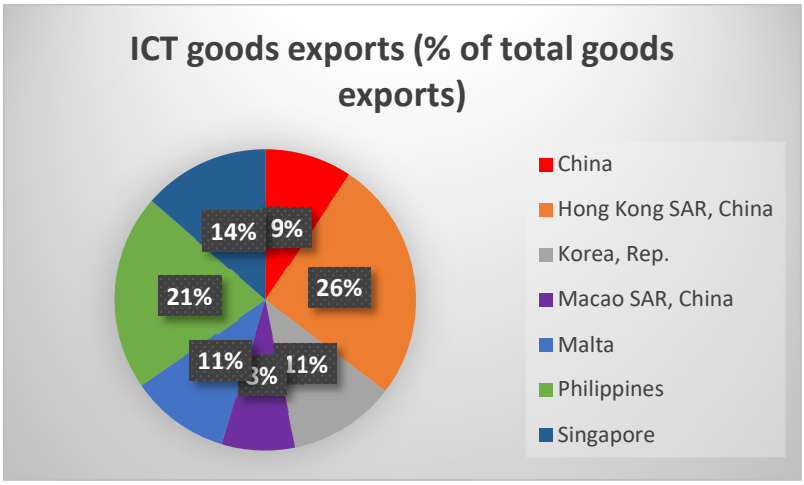
The Liders of patent applications, residents

Country Name	China	United States	Japan	Korea, Rep.	World
2010	293066	241977	290081	131805	1236900
2011	415829	247750	287580	138034	1365200
2012	535313	268782	287013	148136	1519700
2013	704936	287831	271731	159978	1708700
2014	801135	285096	265959	164073	1799200
2015	968252	288335	258839	167275	1972500
2016	1204981	295327	260244	163424	2215100
2017	1245709	293904	260292	159084	2251400
2018	1393815	285095	253630	162561	2386300
2019	1243568	285113	245372	171603	2239200
2020	1344817	269586	227348	180477	2311500
2021	1426644	262244	222452	186245	2385200
2021 to 2010, %	486,8	108,4	76,7	141,3	192,8

Source. World Bank Data Indicators, 2025

In recent years, China has been the leader in the number of patents. At the same time, countries such as the United States, Japan, and South Korea are noticeably inferior. According to forecasts, these countries will continue to lead in the development of Al.

Another indicator of Al's impact on the global economy is the share of digital services in exports. Figure 2 shows the high share of the digital economy services. The export of information and communication services (ICT) and the development of artificial intelligence (AI) are closely interrelated. With the rise of AI, the need for high-quality digital services and specialists increases, as companies using AI need reliable platforms for data processing and connectivity.



Source. World Bank Data Indicators, 2025

Fig. 2. Countries with a high share of digital economy services

In addition, AI also contributes to the creation of new innovative products, such as cloud computing and process automation, which opens up new opportunities for exports. In the future, AI can improve the efficiency and quality of services in the digital economy, making them more competitive in the global market, for example, through improved customer support. The development of AI contributes to the globalization of the global economy, allowing companies to enter new markets and offer their solutions to customers around the world. This could lead to increased exports and global trade.

Conclusions

The rise of artificial intelligence will have a multifaceted impact on the global economy. These technologies will only change existing industries and create new ones, but they will also pose a number of challenges to society that require special attention and solutions. Success in this new economic reality will depend on the ability of countries, companies and individuals to adapt to change while ensuring ethical, sustainable and inclusive development.

However, with the growth of Al, there will also be serious challenges. One of them will be the need for an ethical and legal framework governing the use of Al. Data privacy, security and accountability for Al's actions will become relevant for governments and companies. The need to develop standards and norms that will ensure the protection of citizens' rights will become an important task.

In addition, inequalities in access to technology can exacerbate social and economic gaps between countries and regions. Developing countries may face difficulties in adapting to new technologies, which will lead to a lag in economic development. Therefore, international cooperation and support will be key to ensuring equal access to the opportunities that Al provides.

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