

ARTIFICIAL INTELLIGENCE AND ITS IMPACTS ON THE ECONOMY

A. Y. Murzina

*Belarusian State University, Nezavisimosti Av., 4,
220030, Minsk, Belarus, ariadna.murzina.2002@yandex.ru
Supervisor — Jiahui Yao, Candidate of Sciences (Economics)*

The article is dedicated to the impact of artificial intelligence (AI) on the economy. The growing popularity of AI presents a number of opportunities and challenges and leads to conflicting opinions about the benefits it offers. The purpose of the work is to analyze the key components of AI and the trends formed by them that change organizational, management, production and technological processes in which this technology is actively implemented.

Keywords: artificial intelligence (AI); Chat-GPT; machine learning; natural language processing (NLP); computer vision.

ИСКУССТВЕННЫЙ ИНТЕЛЛЕКТ И ЕГО ВЛИЯНИЕ НА ЭКОНОМИКУ

А. Я. Мурзина

*Белорусский государственный университет, пр. Независимости, 4,
220030, г. Минск, Беларусь, ariadna.murzina.2002@yandex.ru
Научный руководитель – Яо Цзяхуэй, кандидат экономических наук*

Статья посвящена влиянию искусственного интеллекта (ИИ) на экономику. Набирающая обороты популярность ИИ преподносит ряд возможностей и вызовов, порождая противоречивые мнения относительно предоставляемых преимуществ. Целью работы является анализ ключевых компонентов ИИ, формируемых ими тенденций, трансформирующих организационно-управленческие и производственно-технологические процессы, в которых данная технология активно внедряется.

Ключевые слова: искусственный интеллект (ИИ); Chat-GPT; машинное обучение; обработка естественного языка; компьютерное зрение.

Artificial intelligence (AI) is revolutionizing the global economy and shaping the future of various industries such as healthcare, finance, manufacturing and customer service. However, there is still much debate about the future of this technology as the nature of its practical impact is still unclear.

AI, a term first coined by John McCarthy in 1956, is a branch of computer science that aims to develop a machine that can think like humans and mimic human behavior, including sensing, thinking, learning, planning, predicting etc. [1].

In recent years, AI has experienced significant growth worldwide. According to *Precedence Research*, the global AI market size was valued at \$454.12 billion in 2022 and is expected to reach around \$2,575.16 billion by 2032, registering a compound annual growth rate (CAGR) of 19% from 2023 to 2032 corresponds. North America has emerged as the largest AI market as it is home to leading technology giants such as *Facebook*, *Amazon*, *Google*, *IBM*, *Microsoft* and *Apple* [2].

The introduction of AI has a significant impact on the economic development of countries and the global economy as a whole. As with most changes, there will be positive and negative impacts on the global economy as AI continues to transform the world we live in. To fully understand the impact of AI, it is important to examine the components of this technology, including machine learning (ML), natural language processing (NLP), AI robotics, autonomy and sensor technology, and computer vision, as well as those resulting from them Trends in more detail.

ML is a branch of AI that focuses on developing algorithms and models that enable computer systems to learn and make predictions or decisions without being explicitly programmed. In recent years, the ML market has developed rapidly. According to Statista, the size of the global machine learning market is expected to grow from \$49.54 billion in 2020 to \$503.4 billion in 2030 [3]. For example, *GE Oil & Gas* has trained the software platform to analyze information about oil production and develop a schedule for inspections oil production equipment. The platform also informs technicians promptly about any disruptions. At the Russian company *Gazprom*, ML is used to create a digital model of an area around a planned field to assess the feasibility of investing in its development. *DHL*, a logistics company, uses the AI Supply Watch system to take into account weather conditions, road conditions, traffic congestion and crime rates in regions to warn customers about possible disruptions in logistics services [4]. Additionally, ML methods enable companies to manipulate consumer behavior and identify biases and vulnerabilities. This creates an anti-competitive environment as companies can exploit these vulnerabilities to gain an advantage over their competitors. However, due to its specific nature, ML has limitations, including data collection, time and resources, result interpretation, and high error sensitivity.

NLP is a branch of AI dedicated to computational linguistics and focuses on understanding and generating natural language text [5]. Using NLP algorithms, AI systems can recognize written or spoken words, extract meaning from them and generate appropriate answers. This capability has enabled the development of virtual assistants such as *Siri* and *Alexa*, which allow humans to interact with machines effortlessly. The market has also shown a growth trend in

recent years. By 2030, the global market size is expected to reach \$156.8 billion [3].

Computer vision is a third important aspect of AI that enables machines to perceive and analyze visual information by identifying objects and people in images and videos. Currently, this technology is used to increase the efficiency of production processes by 90%, making it an indispensable tool in various industries, from agriculture to healthcare. Computer vision can be used to monitor pipelines and crops, detect counterfeit money and identify problem areas in patients' bodies. According to Statista, the market size in the computer vision market is growing relatively slowly and is expected to reach \$46.96 billion in 2030 [3].

Robotics and autonomous & sensor technology combine “AI and physical systems to create machines or robots capable of performing physical tasks and interacting with the physical world.” AI-powered robots can be developed for various applications, for example for industrial automation, healthcare support, exploration and even domestic tasks” [6]. This can significantly improve the efficiency of our workplaces and increase people’s work performance. According to Statista, the global market size of the two technologies is expected to reach \$64.35 billion and \$55.25 billion, respectively, in 2030. However, there is a risk that employees will be displaced by AI. A study by the *McKinsey Global Institute* suggests that AI could displace between 400 and 800 million jobs worldwide by 2030 [7].

In addition, the negative effects of AI are particularly reflected in the education sector. Due to the widespread popularization of *chat-GPT*, which led to the spread of misinformation, increased bias, increased plagiarism and, as a result, a decline in critical thinking, higher education institutions and government agencies tend to view the development of new AI systems negatively. [8]. However, other systems that have opened up new learning opportunities are worth mentioning: *Character.AI* and *Prof. Jim*. The first offers students the opportunity to communicate with Winston Churchill, Socrates or Napoleon through simulation. *Prof. Jim* is an AI program that scans a textbook or Wikipedia page and automatically converts that information into an exciting online lesson with cinema-quality animation [9]. Using these systems, teachers get their students interested in lessons without spending a lot of time on the idea.

There are also AI for earlier levels of education that act as tutors and are used for students starting in kindergarten. These tools are intended to provide students with individual, direct instruction without the involvement of a human teacher, can provide real-time feedback and change the course of study depending on the student's academic performance [10].

In summary, despite the predicted risks, harmful effects and many prejudices, one should not underestimate the contribution of AI to the potential

development opportunities of both individual areas of life and the global economy as a whole. According to *PwC*, AI could contribute up to \$15.7 trillion to the global economy in 2030 [11]. Only humans determine the nature of the consequences of using AI systems. As a means of achieving goals, this tool is irreplaceable and perfect.

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