COST EFFECTIVENESS OF THE INTRODUCTION OF ARTIFICIAL INTELLIGENCE

Allanazarov Ravshan Shavkat o‘g‘li

Yangiyer Branch of the Tashkent Institute of Chemical Technology

Syrdarya region, Republic of Uzbekistan, Independent Researcher

Nazarov Javohir Ro‘zimurod o‘g‘li

Yangiyer Branch of the Tashkent Institute of Chemical Technology

Syrdarya region, Republic of Uzbekistan, Independent Researcher

Annotation: This article presents information about the concept of "Artificial Intelligence", which has become a relevant topic today, the importance and cost-effectiveness of its implementation. It also analyzes the cost effects of implementing artificial intelligence (SI) in the economy. The effectiveness of artificial intelligence technologies in the areas of production processes, service networks and economic resources management, as well as the role of the labor market and labor force changes and the creation of new jobs will be studied.

Keywords: artificial intelligence, economic efficiency, application of artificial intelligence, algorithms, technologies, implementation of artificial intelligence in economy, information security.

LOG IN

Artificial Intelligence (SI) is a technology that enables computers and machines to mimic human learning, understanding, problem-solving, decision-making, creativity, and

autonomy1. The term is often applied to the project of developing systems that have the ability to think about mental processes inherent in humans, such as reasoning, logical reasoning, generalization, or learning from past experiences. Digital computers have been programmed since their invention in the 1940s to perform extremely complex tasks, such as finding proofs of mathematical theorems or playing chess. Despite ongoing advances in computer processing speed and memory capacity, there are still no programs that can match the full flexibility of humans in broader areas or tasks that require everyday knowledge. On the other hand, some applications have reached the level of performance of experts and professionals in performing certain specific tasks, so artificial intelligence in this limited sense is found in various applications such as medical diagnostics, computer search engines, voice or hand recording recognition, and chatbots.

Artificial intelligence is playing an increasingly important role in our lives and economies, and is impacting our world in a variety of ways. Many see artificial intelligence as a mechanism for efficiency and economic growth. This can increase workflows and greatly improve decision-making by analyzing large amounts of data. It will also help create new products and services, markets and networks, thereby increasing consumer demand and creating new revenue streams. At the same time, artificial intelligence can have a huge impact on the economy and society. Some warn that this could lead to the creation of super firms – centres of wealth and knowledge – that could have a detrimental effect on the wider economy. This could also widen the gap between developed and developing countries and increase the need for workers with certain skills and dismiss others, a trend that could have far-reaching consequences for the labor market. Experts also warn of its potential to increase inequality, lower wages and shrink the tax base. While these concerns remain valid, there is no consensus on whether and how much they are interconnected, and risks arise. They are not known, and a carefully designed policy can encourage the development of SI while controlling for adverse effects.

In order to develop artificial intelligence and its application in various fields in Uzbekistan, according to Decree of the President of the Republic of Uzbekistan dated February 17, 2021 No. PP-4996 "On measures for creating conditions for the accelerated introduction of artificial intelligence technologies", as well as a favorable and optimal ecosystem for the development of innovative business models, products and services based on artificial intelligence technologies create, they

Rapid implementation and implementation in the identified priority industries and industries2 has been identified.

The explosion of artificial intelligence is sweeping the world, causing excitement and anxiety and raising important questions about its impact on the global economy. The exact effect is difficult to predict because the spread of SI varies from country to country. What is clear, however, is that strategies need to be developed to make safe use of SI's enormous potential for the benefit of humanity.

LITERATURE REVIEW

The function and popularity of Artificial Intelligence is increasing day by day. SI applications have evolved significantly over the last few years and have found their applications in almost every line of business. Artificial intelligence is a term used to describe machines that perform human-like cognitive processes such as learning, understanding, reasoning, and interacting. It can take various forms, including technical infrastructure (i.e. algorithms), part of a manufacturing process, or an end-user product. Artificial intelligence has the potential to fundamentally change the way modern societies live.

Directly under artificial intelligence, we have machine learning, which involves creating models by training an algorithm to make predictions or decisions based on data. It involves a wide range of techniques that allow computers to learn from data and draw conclusions from it without having to be specifically programmed for specific tasks.

1. Impact on productivity

SI technologies increase efficiency by automating routine tasks, improving decision-making, and optimizing resource allocation. Studies such as Brynjolfsson and McAfee (2014) [3] note that firms that utilize artificial intelligence can achieve significant efficiency. For example, companies that use artificial intelligence to analyze data and make decisions can optimize processes, resulting in faster uptime and lower labor costs. This trend has been particularly evident in manufacturing and logistics, where AI-driven automation has simplified workflows and minimized uptime. Empirical data show that firms that integrate artificial intelligence can increase productivity by 20-30%, contributing to higher profitability and competitive advantage.

2. Labor market dynamics

The impact of SI on employment remains controversial. While some scientists, such as Arntz, Gregory, and Zierahn (2016) [4], argue that artificial intelligence can squeeze out certain jobs, others emphasize the transformation and creation of jobs. Bessen (2019) [5] suggests that SI can enhance a person's capabilities, leading to the emergence of new job categories that require advanced skills. The overall net impact of employment is likely due to the rate of technology adoption and workforce adaptation.

3. Pay inequality

Studies have shown that SI can exacerbate wage inequality. According to the OECD (2019) [6] report, workers in high-skilled, high-wage industries benefit more from SI gains, while low-skilled, low-paid jobs are at higher risk of automation. This gap could lead to increased economic polarization, raise concerns about social stability, and require policy intervention.

4. Sectoral changes

The effects of SI vary significantly in different industries. For example, McKinsey (2017) [7] predicts significant changes in industries such as healthcare, finance, and retail. In the healthcare industry, artificial intelligence applications increase diagnostic accuracy

and operational efficiency, leading to potential cost savings and better patient outcomes. Conversely, industries that rely on manual labor are likely to suffer more disruption.

5. Economic Growth and Innovation

SI is cited as the main driver of future economic growth. Research by PwC (2018) [8] indicates that SI could contribute up to $15.7 trillion to the world economy by 2030. This growth comes from innovation spurred by artificial intelligence applications, which can lead to both direct productivity gains and the development of new markets and business models.

6. Challenges and dangers

Despite its potential advantages, implementing artificial intelligence presents challenges that include ethical considerations, data privacy concerns, and regulatory hurdles. The World Economic Forum (2020) highlights the importance of building foundations to ensure the responsible use of SI that balances innovation and societal well-being.

The development of artificial intelligence offers hope for a revival of consumption, an increase in productivity in many professions, better risk management, but at the same time, the mass destruction of jobs in developed countries, a massive retraining of skills, digital transformation within social structures

the widening of the gap (Bostrom, 2017; Mateu & Pluchart, 2019). Most observers, such as practitioners and academics, would agree that the SI was a precursor to the Industrial Revolution of the 19th century and the "3rd change of economic history" after the computer revolution of the 20th century (Baldwin, 2019). In this regard, in November-December 2021, the Ipsos Group conducted a study of 19,504 people aged 16 to 74 from 28 countries on the impact of artificial intelligence in various fields. Respondents say that in the coming years, artificial intelligence will contribute 35% to education, 33% to security, 32% to employment, 31% to procurement, and 31% to transport

30% affect entertainment, 27%, cost of living, 23%, the environment, 15%, and personal relationships3.

METHODOLOGY

The purpose of this study is to analyze the economic efficiency of the introduction of artificial intelligence, the advantages and disadvantages of the use of artificial intelligence, the significance of artificial intelligence in the modern economic system, to determine the directions of its further development and formation. In the process of scientific study, static analysis, logic, analysis of various literature and articles are used.

DISCUSSIONS AND RESULTS

SI is one of the driving forces behind the revolution in technology, organizations and society at the beginning of the 21st century. By harnessing the power of data analytics and algorithms, artificial intelligence applications can optimize quality of service, help businesses detect and combat fraudulent transactions, and better protect organizations from hackers, as well as strengthen the fight against accounting fraud.

A recently published analysis by the International Monetary Fund (IMF)4 on the potential impact of artificial intelligence on the global labor market shows that almost 40% of the world's employed population is exposed to risks associated with the development of SI. In the past, automation and information technology have largely impacted routine tasks, but the hallmark of SI is its ability to influence high-skilled jobs. As a result, advanced economies will face more risks associated with SI, reaching 60% of the workforce.

Now SI technology is involved in all processes of the large developed banks. They are built on anti-fraud solutions, credit rating, risk assessment, loan repayment, customer propensity to buy or fall under the influence of scammers, etc. But there's room for growth here, too. Miscellaneous

It is estimated that the use of artificial intelligence systems in some areas of the Bank's activities can increase the productivity of some of the Bank's activities by up to 30 times.

It is difficult to overestimate the importance of our citizens adopting artificial intelligence tools now, because we can see polarization in income categories, workers who can use artificial intelligence can see productivity and wages increase, and those who cannot do so are left behind.

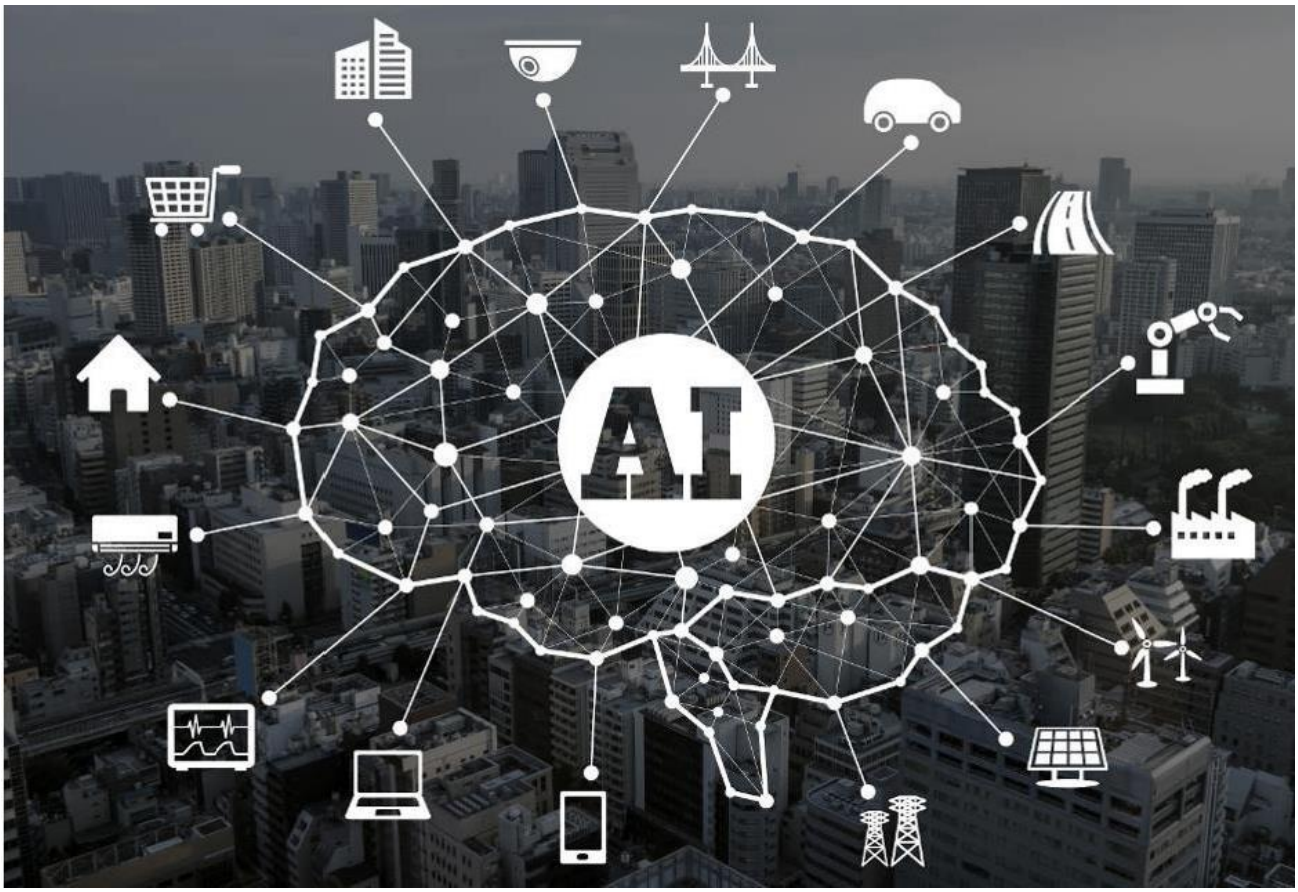

Figure 1. Application of Artificial Intelligence in the Economy5

The model of adoption of artificial intelligence can be similar to the effect of the popularization of ATMs. Although they were initially seen as job killers for bank tellers, the introduction of ATMs led to the opening of more bank branches and more roles for bank tellers, as the cost of opening a single branch dropped significantly due to

automation. This phenomenon is known as the Jevons6 paradox, where technological progress creates efficiencies and lower costs increase demand to the extent that it requires more resources, not less.

SI technologies are being adopted by organisations around the world at a surprising rate, underscoring the need for action on the part of policymakers

emphasizes. To help countries set the right policies, the IMF has developed its Artificial Intelligence Readiness Index, which assesses readiness in areas such as digital infrastructure, human capital and labour market policies, innovation and economic inclusion, regulation and ethics.

Using this index, IMF staff assessed the preparedness of 125 countries. The results show that richer countries, including advanced economies and some emerging markets, are more willing to use artificial intelligence than low-income countries.

Experts from the National Bureau of Economic Research (Massachusetts, USA)7 believe that artificial intelligence will help workers with less experience increase labor productivity faster. While it is easier for younger workers to take advantage of these opportunities, it can be difficult for older workers to adapt. But you have to do it. President of Uzbekistan Shavkat Mirziyoyev, speaking about the introduction of modern technologies 4 years ago,8 noted that "if we do not complete this work in the next 2-3 years, each year of delay will undermine the country's 10-year progress". Those words are undoubtedly even more relevant today.

Existing generative SI and other related technologies are now 60% of the uptime.

Helps automate workflows that consume 70% of their time. The acceleration of technical automation is largely due to the increase in artificial intelligence's natural language comprehension ability, which is required for workflows that take up to 25% of the time. The era of artificial intelligence is just beginning, and its popularity is clearly growing, Do this progressively more New Projects affirms.

However, It takes time for this technology to realize its full potential. Today, business leaders and society need to manage the risks associated with SI, identify required skills and qualifications of employees, and focus on core business

is facing serious challenges, such as revising its processes.

The distinction between an intellectual task and a traditional task is related to the term "algorithm." In mathematics and computer science, it is necessary to create an algorithm for solving problems. The search for algorithms is the natural goal of any person in their search for solutions to various problems. There are regular and "special" tasks. And in order to solve "special" problems, it is necessary not only to create an algorithm, but also to use cleverness, competent thinking and high competence. In other words, human intelligence must be used. When we say "special" tasks, we mean intellectual tasks.

Let's take a look at the role of SI in the economy. As you know, economics SI is also based on algorithms. World-renowned economist Brian Arthur expressed this opinion several years ago in one of his works:

The virtual economy is the development of digital technologies. He wrote in his work that the main element of the new structure will be artificial intelligence working in virtual algorithms. In the second decade of the 21st century, very cheap sensors were created, as a result of which a lot of new data appeared and the need to analyze them arose. As a result, the most innovative methods and algorithms of analysis have been developed. These algorithms can do things that were previously only possible for humans. In addition, the SI does not need control, this is one of the most serious issues. For example, there is a taxi without a driver, the car moves independently along a marked path, recognizes signs. The use of artificial intelligence in business has its advantages. Companies are using facial recognition and voice recognition to automate existing products and services. For example, a fintech company in China has created a mobile application from which you can borrow money for purchases. Here's how this app works:

You must first activate the program with the voice command. Then your credit history and social media profile will be checked. Then, upon verification, credit cards appear on the screen. In the end, the client chooses a suitable offer for him [15www].

As an example, we can analyze the cost efficiency obtained from the implementation of artificial intelligence in different countries.

The cost efficiency from the introduction of artificial intelligence technologies in Russia is estimated at more than 1 trillion rubles, Russian Deputy Prime Minister Dmitry Chernyshenko said in March this year. According to him, about a third of Russian companies use artificial intelligence for their job tasks9. According to the results of the survey, Sber and Yandex can now be called the leaders of the Russian Federation in the field of artificial intelligence. The gap with other market participants is large, but in general, the use of SI in the financial sector is one of the leading areas. The share of the banking sector in the implementation of SI is close to 50%.

The impact of generative SI on productivity could add trillions of dollars to the global economy. SI McKinsey & Co10 adds the equivalent of $2.6 trillion to $4.4 trillion annually to global productivity across 63 program scenarios. By comparison, in 2021, the UK's total gross domestic product was $3.1 trillion.

The company estimates that about 75 percent of the value of using artificial intelligence is concentrated in four areas: customer operations, marketing and sales, software development, and R&D.

According to reports, artificial intelligence has the potential to significantly boost the global economy. For example, artificial intelligence could add 16% to the world economy by 2030, about $ 13 trillion. In addition, the impact of artificial intelligence could increase global GDP by up to 26%. It has also been noted that at least 70% of companies worldwide will integrate artificial intelligence in one form or another in the coming years11.

Bottom Line: The rapid adoption of artificial intelligence technologies will undoubtedly have a profound impact on businesses and economies. Companies that use SI will gain a competitive advantage in their industry. Moreover, as more businesses adopt artificial intelligence, the demand for artificial intelligence expertise will increase, potentially leading to job creation in certain industries and leading to job cuts in others.

An analysis of productivity gains as a result of the introduction of artificial intelligence is presented in Table 1.

1- Table.

Analysis of productivity gains due to the introduction of artificial intelligence

Spaces	Average fertility Growth (%)	Main Apps
Production	25-30%	Robotics, predictive engineering service
Sanitation and Sanitation	20-25%	Diagnosis, patient management
Trade	15-20%	Inventory control, Customer Intelligence
Finance	30-35%	Fraud detection, algorithmic, Trade

However, the use of artificial intelligence also comes with its risks. The SI will squeeze people out of their jobs, which will lead to higher unemployment.

Analyzing most business opinions about the possible consequences of using artificial intelligence, the most important place is occupied by employee redundancy due to the reduction in routine operations14.

The result of the analysis of industrial changes driven by artificial intelligence is presented in Table 2.

2- table

Industry Changes Driven by Artificial Intelligence

Spaces	Share of economic growth
Sanitation and Sanitation	30%
Production	25%
Finance	20%
Trade	15%
Other Areas	10%

It is believed that the most of the professions that can be transferred are accounting; finance; secretaries. The predicted changes in the labor market due to artificial intelligence are presented in Table 3.

3- Table

Predictable changes in the labor market due to artificial intelligence

Work category	Potential change (%)	Description
Highly qualified work Locations	+15%	Technical and management roles increased demand
Medium-skilled work Locations	-10%	Continuing Functions Automation
Downstream Skilled Work Locations	-25%	The risk of displacement is very high
Create new roles	+20%	SI Professionals, Data Scientists analysts

The trend of information addiction will remain relevant in 2025 as well. Moreover, the importance of data in the life of society will increase – without it modern infrastructure cannot be built. The average number of information exposures per capita will increase 20 times in the coming years. Our homes, workplaces, devices and wearables, vehicles, and implants are slowly becoming smarter, and more and more devices can connect to the internet. In addition, there are information security problems when using artificial intelligence.

Information security becomes the most important foundation of the world's existence. As the global volume of information explodes, the gap between what is protected from cybercriminals and what needs to be protected will widen. The actual protected analytical data volume will be 40%, and in 2025, 90% of the data will need protection. Security systems will be mandatory for the processing of corporate financial data, personal data, and medical records [19].

CONCLUSION AND SUGGESTIONS

The economic impacts of the introduction of artificial intelligence are multifaceted, affecting productivity, employment, wage distribution, network dynamics, and overall economic growth. While the SI presents important opportunities, it also presents challenges that require thoughtful policy responses. Future research should continue to examine the long-term impact of SI on the economy, with a focus on ensuring inclusive growth and addressing the imbalances it can create.

Further scaling up the application of artificial intelligence is inevitable.

The main areas of use of SI in the economic sphere are:

Process Automation: SI enables you to automate common tasks such as data processing, records storage, and inventory management.

Data Analysis and Forecasting: SI helps analyze large amounts of data to identify trends and predict future events.

Personalization of services: SI enables companies to offer personalized recommendations and services based on customer preferences.

Delivery System Management: SI optimizes the management of the supply chain by improving the planning and coordination.

Financial Technology (FinTech): SI is actively used in the financial sector for risk analysis, lending, and investment management.

Customer service: SI-based chatbots and virtual assistants improve the customer experience and reduce costs.

Risk Management: Helps in the identification and mitigation of SI financial and operational risks.

New Product Development: S&P speeds up the process of new product development and testing process through analysis of feedback and market data.

In a nutshell, the use of artificial intelligence in the economic sphere opens up many opportunities to increase efficiency, reduce costs, and improve the quality of services. However, it is also necessary to take into account the ethical challenges and the need to upskill workers, as the demand for qualifications will change.

From all this, we can conclude that artificial intelligence is a dynamically developing system with a number of shortcomings, but at the same time, it is possible to correct or improve the same shortcomings, thus transferring the SI to the next stage of development. It will soon become just as ingrained in our lives as the internet or other technologies. But the disadvantages of such a system are

There will be inequality in the market of developed countries compared to non-developed countries and the vulnerability of this system to cybercrime.

LIST OF REFERENCES:

1. https:// www.ibm.com/topics/artificial-intelligence.

2. https://lex.uz/docs/-5603319.

3. Brynjolfsson, E., & McAfee, A. (2014). "The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies".

4. Arntz, M., Gregory, T., & Zierahn, U. (2016). "The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis.

5. Bessen, J. E. (2019). "AI and Jobs: The Role of Demand."

6. OECD. (2019). "Future of Work: Employment Outlook"

7. McKinsey Global Institute. (2017). "A Future That Works: Automation, Employment, and Productivity"

8. PwC. (2018). "The Economic Impact of Artificial Intelligence on the UK Economy"

9. https:// www.emerald.com/insight/content/doi/10.1108/JEBDE-10-2023- 0022/full/html

10. https:// www.imf.org/en/Publications/Staff-Discussion- Notes/Issues/2024/01/14/Gen-AI-Artificial-Intelligence-and-the-Future-of-Work- 542379?cid=pr-com-SDNEA2024001

11. https://critaceducation.com/educationonline/course-details.php?c_id=258

12. https://dzen.ru/a/ZG79LnDfMAVScn5L

13. https:// www.nber.org/papers/w31161

14. https://president.uz/ru/lists/view/3566\

15. Валеева Ю.А. студент, Буйная Е.В. научный руководитель, ФГБОУ ВО Кузбасский государственный технический университет имени Т.Ф. Горбачева ИСКУССТВЕННЫЙ ИНТЕЛЛЕКТ В ЭКОНОМИКЕ. "World Science" No. 12(21) 2018.

16. https://sia.ru/?section=484&action=show_news&id=461134

17. https:// www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the- economic-potential-of-generative-ai-the-next-productivity-frontier#introduction

18. https:// www.researchgate.net/publication/373749082_The_Transformative_Power_of_AI_Projected_Impacts_on_the_Global_Economy_by_2030

19. Дадашев Заид Фирузович, Устинова Наталия Григорьевна. ВЛИЯНИЕ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА НА ЭКОНОМИКУ. The Age of Science No. 18 – Июнь 2019 г. Экономические науки.