



Artificial Intelligence as a Geostrategic Arena of Competition among Major Powers (the United States, China, and Russia): An Evolutionary Analysis for the Period 2000–2022

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Abstract ;

This study examines the role of artificial intelligence in shaping geostrategic competition among the three major powers: the United States, China, and Russia. It finds that artificial intelligence has contributed positively to the economic growth of these economies, albeit at varying levels, thereby intensifying competitive dynamics among them. The analysis reveals a significant relationship between economic growth and exports of advanced technologies, as well as between the exports and imports of information and communication technology (ICT) goods. Despite China's substantial economic capabilities, the findings suggest that overtaking the United States remains unlikely in the near term, given China's commitment to the principle of non-use of force and the United States' enduring economic and financial strength.

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1. Introduction

Artificial Intelligence (AI) is a branch of computer science that seeks to develop systems and programs capable of performing tasks that typically require human intelligence. Such tasks include learning, comprehension, reasoning, and decision-making.

One of the defining features of the modern era is the remarkable advancement of technology, which serves diverse fields and disciplines. Our contemporary world is now characterized by innovation and scientific progress. Within this context, the economics of artificial intelligence has become a central concern for researchers, experts, and policymakers, as it has generated profound transformations across multiple dimensions of life. AI is considered both a predictor of economic growth and a tool for enhancing societal well-being.

This explains why nations are increasingly investing in AI, as it has emerged as the new frontier of modern investment, a critical determinant of economic growth, and a driver of societal development. The economics of AI has therefore become a stage for economic rivalry among major powers, particularly the United States, China, and Russia, which represent the epicenters of the Fourth Industrial Revolution. Each of these powers aspires to acquire knowledge and assert dominance over the global economy by intensifying investments in AI technologies.

Against this backdrop, a central question arises, which constitutes the core problem of this study:

Main Research Question:

What is the impact of artificial intelligence on the three major powers from an economic perspective?

Sub-Questions:

Deriving from the main research question, several secondary questions emerge, the most significant of which are:

- What is the relationship between artificial intelligence and the global economy?
- What are the future prospects of artificial intelligence?
- What is the impact of artificial intelligence on the economic growth of the United States, China, and Russia?
- Is there a relationship between Gross Domestic Product (GDP) and economic growth in the United States, China, and Russia?
- Is there a relationship between advanced technology exports and economic growth in the United States, China, and Russia?
- Is there a relationship between imports and exports of information and communication technology (ICT) goods and economic growth in the United States, China, and Russia?

Research Hypotheses:

In order to address the research problem, the following hypotheses are proposed:

- Artificial intelligence has a direct relationship with the global economy through enhancing productivity, transforming labor markets, and contributing to the achievement of sustainable development goals.
- Artificial intelligence contributes to the development of the global economy and the improvement of societal welfare.
- Artificial intelligence has a significant impact on economic growth, as it has created a sphere of competition among the three major powers.
- There is a relationship between Gross Domestic Product (GDP) and economic growth in the United States, China, and Russia.

Significance and Objectives of the Study:

The significance of this study derives from the role of artificial intelligence, as it contributes to the development of the global economy and the achievement of sustainable development. The objectives of this study are to clarify the concept of artificial intelligence, to explore its economic prospects, and to identify its key determinants in the three major powers.

-There is a relationship between advanced technology exports and economic growth in the United States, China, and Russia.

-There is a relationship between exports and imports of information and communication technology (ICT) goods and economic growth in the United States, China, and Russia.

Structure of the Study:

This study is organized into three main sections:

- ✓ Fundamentals of Artificial Intelligence.
- ✓ The Future of the Economy with Artificial Intelligence.
- ✓ Determinants of Artificial Intelligence in China, Russia, and the United States.

Previous Studies:

Study: Hicham Alaq and Hanan Duraid, “*Applications of Artificial Intelligence in Financial Institutions: An Approach to Enhancing Financial Inclusion*,” published in the *Journal of Economics and Sustainable Development*, Vol. 5, No. 1, 2022.

This paper aimed to examine the contribution of artificial intelligence applications in financial institutions to strengthening financial inclusion, which has long been a challenging goal for governments in both developed and developing countries. Following a theoretical grounding of the study variables, the paper presented several case studies of financial institutions that rely on artificial intelligence to provide services to their clients, along with empirical data achieved through the use of AI algorithms. The study concluded that artificial intelligence has played an effective role in expanding access to financial services for marginalized and excluded groups from formal financial systems, as traditionally evaluated by the classical financial industry. The authors argue that artificial intelligence may represent an optimal solution for advancing levels of financial inclusion.

Study: Sanae Ertibaz, “The Impact of Artificial Intelligence on Improving Institutional Performance,” published in the *Journal of Human Sciences*, University of Oum El Bouaghi, Vol. 9, No. 3, 2022.

In this study, the researcher considered artificial intelligence as one of the most significant modern sciences, contributing substantially to the creation of new ideas and knowledge by understanding and simulating the nature of human intelligence. AI applications have become an indispensable necessity for business organizations. The purpose of this study was to examine AI applications as an effective mechanism for enhancing the performance of economic institutions. It highlighted the fundamental concepts of artificial intelligence and its applications, as well as the role it plays in gaining competitive advantage. The study further investigated the impact of artificial intelligence on improving institutional performance and concluded that the integration of AI applications has become a crucial and essential factor in enhancing the performance of economic institutions.

Study: Houria Gueroui and Lakhdar Ben Goumar, “The Role of Artificial Intelligence Applications in Enhancing Human Life,” presented at the International Conference on the Governance of Artificial Intelligence Systems in the Balance of Legislation and Law, 2023, published by the University of Ghardaïa.

This study revealed that most countries around the world are witnessing significant progress in computer technology, with artificial intelligence beginning to simulate human cognitive abilities across all aspects of daily life. The authors highlighted the advantages and positive contributions

of AI, emphasizing its benefits for humanity as a whole. The study concluded that artificial intelligence has become an urgent necessity in shaping the future, particularly in the context of ongoing digital transformation worldwide.

2. Fundamentals of Artificial Intelligence

Artificial Intelligence (AI) is a branch of computer science dedicated to addressing cognitive problems typically associated with human intelligence, such as learning, creativity, and image recognition. AI is employed in a wide range of applications, from virtual personal assistants and chatbots to autonomous vehicles and medical diagnostic systems. Therefore, the future of artificial intelligence is considered promising, offering new horizons and opportunities.

2.1 Definition of Artificial Intelligence:

Artificial intelligence refers to the intelligence created or simulated by humans in machines or computers—intelligence that originates from human cognition and is subsequently transferred to the machine. Accordingly, artificial intelligence is defined as a field of science whose primary objective is to enable machines (computer systems) to perform tasks that typically require human intelligence. (Saad , 2012, p. 114)

The purpose of artificial intelligence is to reconstruct, through artificial means—namely computers—intelligent thinking and behavior. According to O'Brien, artificial intelligence is defined as a science and technology grounded in several cognitive fields, including computer science, mathematics, biology, philosophy, and engineering, all of which aim to develop computational functions that simulate human intelligence. (Nouri, 2012, p. 141)

Artificial intelligence encompasses various cognitive abilities and logical processes that contribute to problem-solving and the effective and efficient handling of issues. (Aboubakra, 2019, p. 11)

It is defined as a branch of computer science concerned with intelligent computer systems—those that possess characteristics associated with intelligence and decision-making, and that, to some extent, resemble human behavior in this domain, particularly in relation to language, learning, reasoning, and problem-solving, among others. (Eissam & Lakhdar , 2021, p. 91)

Artificial intelligence is a broad term that encompasses various activities, such as pattern recognition by computers, expert systems, deep learning, reasoning by computers, and the use of natural language by computers, among others. AI is also described as a computer program capable of making balanced decisions, monitoring its environment, and taking actions that increase its likelihood of achieving a given objective. (Hussein , 2023, p. 433)

Artificial Intelligence (AI) is a field of science that enables machines to make decisions and act intelligently by simulating human beings and their way of thinking. As human beings, we receive information from the external world, process it in our minds, and then make judgments and draw conclusions based on it, as well as on prior experiences. (Allaa, 2024, p. 12)

2.2 Types of Artificial Intelligence: (Idha'at, 2021, pp. 4 -6)

Enter In view of the remarkable progress recently achieved in artificial intelligence research, conscious and intelligent devices have become an imminent reality. By “conscious devices,” we refer to machines capable of understanding verbal commands and recognizing images. The most prominent types of artificial intelligence include:

Reactive Machines: Reactive machines represent the simplest form of artificial intelligence. They are incapable of forming memories or utilizing past experiences to make immediate decisions. Current intelligent devices range from machines with no abstract understanding of the world to those with a very limited and highly task-specific perception. Certain methods have been developed to enhance these machines' abilities, enabling them, for example, to perform better in

specific games. However, AI-powered devices cannot easily adapt or interact with the world in the way we envision future AI systems might. These machines cannot perform tasks outside their programmed scope, as they lack even the most basic understanding of the world, and can therefore be easily deceived.

Limited Memory:

The second category includes machines capable of examining the past, such as self-driving cars, which monitor the speed and direction of other vehicles. This process cannot occur instantaneously; rather, it requires setting clear objectives and continuously observing them. Such observations are integrated into the pre-programmed world model of autonomous vehicles, which includes road lane markings, traffic signals, and other important elements such as curves, all of which are used when deciding to change lanes in order to avoid cutting off another driver or colliding with nearby vehicles. However, this limited memory quickly fades, as it is not stored as part of a cumulative knowledge base from which the car can learn—unlike the human brain, which relies on years of driving experience.

Theory of Mind: In the near future, AI systems are expected to become more advanced and sophisticated, not only in their perception of the external world but also in their ability to incorporate additional factors and variables. In psychology, this concept is known as the “theory of mind,” which refers to the recognition that thoughts and emotions influence behavior. This capacity, while not yet realized in AI, would allow machines to consider the mental states of humans and possibly other entities.

Self-Awareness: The final stage entails machines attaining self-awareness, enabling them to form representations of themselves. This would allow AI researchers to define the meaning of consciousness and potentially construct machines that possess it. Such development would be an extension of the “theory of mind” associated with the third category of AI. Since the creation of self-aware machines remains far from our current capabilities, it is essential, for now, to focus on understanding memory, learning, and the ability to make decisions based on prior experiences and situations.

2.3 Objectives of Artificial Intelligence: (Souria & Essaid , 2022, p. 461)

As previously defined, artificial intelligence is a branch of computer science that is built upon the study and design of intelligent agents. An intelligent agent is a system that perceives its environment and takes actions that maximize its chances of successfully accomplishing its tasks—or those of its team. In essence, this discipline revolves around the science and engineering of creating intelligent machines with the following objectives:

Understanding complex mental processes performed by the human mind during thinking, and subsequently translating these mental operations into computational processes that enhance the computer’s ability to solve complex problems.

Understanding the nature of human intelligence by developing computer programs capable of simulating intelligent human behavior. This refers to the computer program’s ability to solve a given problem or make a decision in a particular situation based on its description of that context. The program itself determines the appropriate method to follow in order to reach a solution or a decision by resorting to multiple inferential operations embedded within it. This represents an important turning point that transcends conventional information technology, since in this case the inferential process is performed in the manner of human reasoning.

2.4 The Importance of Artificial Intelligence: (Mohamed, 2021, p. 21)

Artificial intelligence holds significant importance, particularly in the context of globalization and modern technologies that are shaping the contemporary world. Its importance can be outlined as follows:

Comprehensive applicability: The significance of AI stems from the fact that its applications and systems extend to virtually all fields of life. They are not limited to a single domain; rather, AI can be employed in medicine, security, politics, tourism, and the travel industry. AI systems facilitate scientific research, enabling individuals to plan and complete assigned tasks more quickly and efficiently.

Autonomy and objectivity: AI systems operate with independence and impartiality, which makes their decisions less prone to errors, bias, prejudice, or external and personal interferences.

Risk reduction: AI systems help reduce the risks and pressures faced by humans by deploying machines to perform hazardous and labor-intensive tasks, as well as participating in rescue operations during natural disasters.

Contribution to smart societies: Through its various systems and applications, AI contributes to building intelligent communities, cities, and nations. It fosters collaboration between humans and machines for the well-being of citizens, particularly in countries that utilize their resources efficiently. Furthermore, AI enhances human productivity by supporting training, qualification, and development efforts aimed at achieving sustainable development in today's fast-changing world.

2.5 Fields and Applications of Artificial Intelligence: (Ru'ya, 2021, p. 2021)

Artificial intelligence is employed across a wide range of military, industrial, economic, technological, medical, educational, and service-related domains. Among its most significant applications are the following:

- Autonomous vehicles and unmanned aerial drones.
- Robotics: robots are mechanical devices programmed to operate independently of human control, designed to perform tasks and execute motor and verbal skills typically carried out by humans. They are also applied in sensitive fields such as nuclear reactors, cable installation and repair in underground networks, landmine detection, automobile manufacturing, and other precise domains.
- Nonlinear control systems, such as railway control.
- Smart devices capable of performing cognitive operations, such as examining industrial designs, monitoring processes, and making decisions.
- Cognitive simulation, using computers to test theories about how the human mind works and the functions it performs, including facial and voice recognition, handwriting identification, image processing, and extracting useful data and information for memory activation.
- Medical applications, including computer-assisted diagnostics in clinics and hospitals, as well as surgical procedures.
- Economic data analysis, such as stock market forecasting and the development of stock-trading systems.
- Game programs, including chess and video games.
- Google search clusters, enabling large-scale online data retrieval and processing.
- Natural language processing applications, which include the understanding of spoken and written languages, automated question-answering systems with pre-programmed responses, and real-time machine translation.

-Expert systems, capable of performing tasks in ways similar to human experts and supporting them in decision-making with high precision, relying on a set of logical operations to reach accurate decisions or generate alternative options.

-Smart home services, autonomous weapons, smartphones, smart TVs, and hundreds of other applications

2.6 Drawbacks of Artificial Intelligence: (Souznoun, 2024, pp. 581 - 583)

Alongside the rapid advancements in artificial intelligence, it is equally important to consider the challenges and drawbacks that may arise from the use of this advanced technology. The main disadvantages of AI can be summarized as follows:

High Cost of AI Systems: Despite the wide use of AI entities, benefiting from this technology can be extremely costly in certain cases, as it requires substantial investments for acquisition, operation, and management. This explains the stark disparity between developed and developing countries in their ability to control, utilize, and benefit from AI technologies

Lack of Responsiveness to Change and Circumstances: Often referred to as the “programming problem,” AI systems rely heavily on the data and algorithms used in their design and training. These systems are essentially sets of algorithms that determine their ability to adapt, adjust, and respond to changes. However, such data may contain human errors or biases, thereby affecting the accuracy of AI outputs.

Inability to Understand Human Emotions: Unlike humans, who are capable of accurately perceiving and interpreting emotions, AI systems—being mechanical entities—lack any form of emotional sensitivity.

Limited Cognitive Power Compared to the Human Mind: AI depends on computers and technological infrastructure. Consequently, any error within these systems can lead to significant flaws in outcomes. For instance, the medical application *Watson* can detect tumors efficiently and provide treatment recommendations comparable to those of specialists. Yet, because it relies entirely on stored data, its recommendations may sometimes be erroneous, which in turn can negatively affect medical diagnoses. Recognizing such risks, the European Parliament issued a resolution in 2019 emphasizing the need to prevent patients from fully relying on AI systems for medical diagnoses and treatments.

Displacement of Workers: AI may bring about radical transformations in employment. Robots and computers can replace tasks traditionally performed by humans, increasing reliance on technology and reducing the demand for human labor. This shift may contribute to rising unemployment, with significant economic and social consequences.

Artificial Intelligence as a “New Criminal Actor”: Another major concern is the potential for AI systems to commit acts considered criminal under penal law. This issue poses one of the greatest challenges for criminal justice, as it raises the question of how to establish clear legal frameworks that uphold the principle of legality while ensuring accountability.

Among the most notable AI-related crimes identified in legal scholarship are:

-Crimes involving autonomous vehicles: Self-driving cars are among the most prominent and widely discussed AI applications. Experts predict their large-scale adoption in the near future, which necessitates the establishment of a clear legal framework to address potential crimes. A real-world example occurred in 2018 when an Uber self-driving car struck and killed a pedestrian in Arizona, despite being equipped with AI-based safety systems.

-Crimes involving robots: Once limited to science fiction, robots have become a global market worth billions, particularly in advanced economies. The sophistication of robotics has become a benchmark of technological strength, replacing the old adage “he who owns wealth owns power” with “he who owns knowledge owns power.” However, this development has brought new challenges regarding ethical, social, and industrial concerns. Military, educational, legal,

entertainment, and healthcare robots have already raised practical questions about their potential misuse in criminal contexts. One notable case involved a worker being fatally crushed by a robot in a factory, sparking widespread debate about the dangers of robotics—even though the factory administration classified it as an accident.

Given these risks, scholars and experts emphasize the need for an **ethical code of conduct** to be embedded in robots, enabling them to distinguish between lawful and unlawful actions, as well as between socially acceptable and unacceptable behavior. Such a framework would improve trust in human–robot interaction while ensuring safety and compliance with ethical and legal standards.

3. The Future of the Economy with Artificial Intelligence

In brief, artificial intelligence constitutes a fundamental driver in enhancing economic performance across all dimensions. It can contribute to improving efficiency, strengthening forecasting, guiding markets, delivering personalized services, fostering innovation, reducing costs, and enhancing customer experience, thereby promoting economic growth and reinforcing overall prosperity.

3.1 Artificial Intelligence and the Economics of the Future: (Al- Birani, 2032)

According to a report by *MarketsandMarkets*, the size of the artificial intelligence (AI) market is projected to reach hundreds of billions of dollars by 2025. Research indicates that the adoption of smart technologies such as AI can significantly enhance economic growth. Estimates from various global economic institutions suggest that the full utilization of smart technologies could increase economic productivity by hundreds of billions of dollars.

Investments are increasingly being directed toward AI-driven projects, prompting companies and governments to allocate larger budgets for research, development, and the implementation of AI solutions. AI enables firms to enhance operational efficiency and reduce costs through smart operations, predictive maintenance, and large-scale data analytics. Consequently, AI is assuming a progressively critical role in shaping the economy of the future.

Some of the major ways in which AI impacts the economy include:

- Enhancing productivity:** AI can increase productivity across a wide range of industries by automating processes and optimizing efficiency, thereby contributing to economic growth.
- Improving inventory management:** AI can help firms better manage inventory and enhance forecasting accuracy, which reduces storage costs and waste.
- Developing new industries:** AI has the potential to open new avenues for emerging industries, creating job opportunities and driving economic expansion.
- Improving forecasting and decision-making:** By processing and analyzing massive datasets rapidly, AI enables businesses and governments to make more accurate, evidence-based decisions.
- Transformations in the labor market:** Advances in technology and the deployment of AI may lead to shifts in labor markets, with new jobs requiring advanced skills and continuous training.
- Enhancing customer experience:** AI can be applied to deliver personalized services, tailor offers and advertisements, and ultimately improve customer satisfaction.
- Advancing healthcare:** AI contributes to more accurate disease diagnosis and treatment planning, thereby reducing healthcare costs and improving public health outcomes.
- Strengthening security:** AI can be utilized to bolster system and network security, as well as to combat crime and address security threats.

In conclusion, AI plays a vital role in promoting sustainable and inclusive economic development.

3.2 The Impact of Artificial Intelligence on Achieving the Sustainable Development Goals: (NESCO, 2021)

Enter here At the United Nations Headquarters in New York, in September 2015, heads of state and government adopted the Sustainable Development Agenda, which comprises 17 new global goals to be achieved by 2030. This plan explicitly recognized the importance of technology in realizing the Sustainable Development Goals (SDGs). Technology is not only referenced in Goal 17 as a key means of implementation, but in fact, among the 169 specific targets, 48 are directly (14 targets) or indirectly (34 targets) related to technology. Furthermore, technological dimensions can also be identified within the remaining 121 targets, highlighting technology as one of the most crucial instruments for implementation.

The expansion of artificial intelligence applications and the economic gains they generate provide a pathway toward achieving the SDGs. With its ability to learn, analyze, and make decisions, AI holds great promise for advancing numerous economic sectors, enhancing their efficiency, and increasing productivity. This, in turn, contributes to addressing economic challenges, reducing hunger and poverty, fostering economic growth, and improving living standards across societies—ultimately supporting the realization of sustainable development goals.

3.3 Labor Markets: (L- Arabiya, 2023)

Despite the considerable uncertainty surrounding the potential of generative artificial intelligence, its ability to generate content indistinguishable from human output and to bridge communication barriers between humans and machines reflects a major advancement with potentially significant macroeconomic implications. According to economists Joseph Briggs and Devesh Kodnani of *Goldman Sachs*, a new wave of AI systems could have a profound impact on global labor markets. Shifts in work flows resulting from these developments could expose the equivalent of 300 million full-time jobs to automation.

By analyzing databases detailing task content for more than 900 occupations, the economists estimate that nearly two-thirds of U.S. jobs are exposed to some degree of automation through AI. They further estimate that within those exposed occupations, approximately one-quarter to one-half of the workload could be automated. However, as the report highlights, not all of this automation would necessarily translate into job displacement.

Briggs and Kodnani write: *“Although the impact of AI on the labor market is likely to be substantial, most jobs and industries are only partially exposed to automation and are therefore more likely to be complemented rather than fully replaced by AI.”* Moreover, historically, jobs displaced by automation have often been offset by the creation of new roles. Indeed, the emergence of new occupations following technological innovations has accounted for the vast majority of long-term employment growth. A recent study by economist David Autor, cited in the report, found that 60% of today’s workers are employed in occupations that did not exist in 1940. This indicates that over 85% of employment growth during the past eighty years has been driven by technology that generated entirely new roles.

3.4 Artificial Intelligence and Economic Growth: Opportunities, Challenges, and Risks: (Al-sumaiti, 2023)

With the advancement of science and the increasing need to simulate human intelligence, artificial intelligence (AI) emerges as a driving force for economic growth, measured by the percentage increase in gross domestic product (GDP). Contributing factors to economic growth generally include the labor force, infrastructure, the availability of new opportunities for employment, investment, technological progress, the growth of individual income, among other elements.

AI plays a vital role in reinforcing these factors by continuously influencing various employment sectors. Its role is not limited to enhancing existing jobs and improving their performance, but it also actively contributes to the development and support of the labor market, creating new employment opportunities. Consequently, the demand for jobs specialized in AI education and applications is expected to grow, alongside the expansion of research and development (R&D) activities related to AI and the study of its future evolution.

With the increasing volume of data feeding AI systems, new career opportunities are emerging in fields such as data collection and advanced data analysis. Beyond this, further opportunities are arising in the development of AI algorithms and the management of machine systems operating with this technology. Such advancements are anticipated to enhance productivity—a key feature of economic growth. Moreover, AI can contribute to demand forecasting and resource optimization, ensuring that needs are met in the most efficient way possible.

AI also fosters digital transformation, the growth of small enterprises, and the reduction of human error in certain contexts. By opening new avenues for market competition and improving service delivery, AI stimulates economic activity. For instance, AI can enhance management systems across different sectors and support environmentally and economically sustainable practices.

Furthermore, AI can extend the lifespan of sectoral infrastructures—including machinery, systems, and networks that sustain the economy—through predictive maintenance, early fault detection, and the reduction of potential negative spillover effects on interconnected systems. This applies equally to predicting the condition of environmental resources and their impacts on humans and physical networks, thereby preventing human, material, and financial losses while saving time and effort.

AI also provides economic markets with strategic guidance for optimal decision-making and best practices in financial risk management. AI-supported strategies will increase the likelihood of business continuity, promote efficient growth, and help identify the best opportunities for investment in areas driven by research, development, and innovation.

Nevertheless, concerns persist about the loss of traditional jobs that lack integration with AI, as well as anxieties regarding the accuracy of AI-driven data analysis and the reliability of decisions based on such outputs. Additional risks involve biased data, privacy issues, and unlawful data usage, such as identity theft. Excessive reliance on AI—particularly in critical operations—and the marginalization of the human role could even lead to catastrophic outcomes. This raises a fundamental question: what is the solution?

The answer lies in strengthening AI education, refining relevant skills, addressing bias, and ensuring human involvement in sensitive AI-dependent operations. These measures can be achieved through training programs, integrating AI sciences into academic curricula, raising public awareness of their significance, and creating new employment opportunities for workers in traditional sectors.

Equally essential is the reinforcement of cybersecurity to guarantee an environment that safeguards user privacy, protects data, and secures AI-based systems. Achieving this will require support on multiple levels—financial, scientific, technical, and technological. Collaboration among governments, policymakers, facility managers, industry stakeholders, and researchers in AI and technology will be crucial to realizing the intended outcomes. Such collective efforts will shape effective AI policies, which will play a decisive role in building a better future and in defining the societal and economic impacts of AI-driven growth.

3.5 Projected Economic Gains from the Use of Artificial Intelligence Technologies: (Abdel Moneim & Ismail, 2021, p. 18)

At the global level, projections indicate that China will achieve the largest share of economic gains, estimated at approximately USD 7 trillion, with a growth rate of nearly 26.1% by 2030. This will be followed by North America, with projected gains of USD 3.7 trillion, representing around a 14.5% increase in GDP levels. Collectively, the expected gains for China and North America amount to USD 10.7 trillion, accounting for nearly 70% of the anticipated global gains from the adoption of these technologies.

Furthermore, Europe and developing Asian countries are expected to record gains of about USD 3.4 trillion from AI, while the remaining geographical regions, including developing nations and emerging markets, are projected to achieve modest benefits from AI. This relatively limited impact is attributed to the lower levels of AI adoption compared to advanced economies.

4. Determinants of Artificial Intelligence in China, Russia, and the United States

Several factors influence the development of artificial intelligence (AI) technologies, and these factors have a direct impact on the growth of economies by contributing to the increase of gross domestic product (GDP). The United States, China, and Russia represent the largest economies in the world, and they are engaged in intense competition for dominance in the AI market. This competition highlights AI as a model of future economic warfare.

4.1 The Evolution of GDP in China, Russia, and the United States (2000–2022):

As shown in Table (01), Russia ranked first in 2000 with a GDP growth rate of 10%, followed by China at 8.50%, and finally the United States at 4.10%. However, this does not imply that the United States lost its global dominance. In 2007, China achieved its highest GDP growth rate, reaching 14.20%, but this figure quickly declined during 2008–2009 to 9.70% and 9.40%, respectively. A similar trend occurred in both Russia and the United States, though the decline was more severe than in China, with Russia recording 5.20% and –7.80%, and the United States 0.10% and –2.60%, respectively. These downturns were largely the result of the financial crisis that originated in the United States and subsequently spread across the globe, affecting European, Asian, Gulf, and developing countries whose economies were directly linked to the American economy.

Most countries maintained varying levels of GDP growth until the end of 2019. However, in the subsequent years, GDP dropped to its lowest levels due to the COVID-19 pandemic, which caused a global recession. In 2020, China's GDP growth fell to 2.20%, Russia's to –2.70%, and the United States' to –2.80%. This crisis reshaped global economies—both advanced and developing—leading to rising inflation rates, the effects of which are still felt to this day.

It is worth noting that the Chinese economy continues to achieve growth multiples compared to both the American and Russian economies. This indicates China's ability to realize the objectives outlined in its government strategies, most notably its vision to complete the “Chinese path” by 2050 and ascend to the leading global economic position in terms of GDP, surpassing the United States, which has maintained its position as the world's largest economy for over 150 years. One of the main strengths underpinning China's potential success lies in the accelerated annual growth of its total production of goods and services.

Table (01): Annual GDP Growth Rate in China, Russia, and the United States for the Period 2000–2022 (%)

Years / Countries	china	Russia	United States of America (USA)
2000	8.50	10.00	4.10
2001	8.30	5.10	1.00
2002	9.10	4.70	1.70
2003	10.00	7.30	2.80
2004	10.10	7.20	3.90
2005	11.40	6.40	3.50
2006	12.70	8.20	2.80
2007	14.20	8.50	2.00
2008	9.70	5.20	0.10
2009	9.40	-7.80	-2.68
2010	10.60	4.50	2.70
2011	9.60	4.30	1.50
2012	7.90	4.00	2.30
2013	7.80	1.80	1.80
2014	7.40	0.70	2.30
2015	7.00	-2.00	2.70
2016	6.80	0.20	1.70
2017	6.90	1.80	2.20
2018	6.70	2.80	2.90
2019	6.00	2.20	2.30
2020	2.20	-2.70	-2.80
2021	8.40	5.60	5.90
2022	3.00	-2.10	2.10

Source: Prepared by the researcher based on World Bank statistics (25/08/2025):

<https://data.albankaldawli.org/indicator/NY.GDP.MKTP.KD?locations=DZ>

4.2 High-Technology Exports of China, Russia, and the United States during the Period 2007–2021

As observed in Table (02), there are fluctuations in high-technology exports from the United States and Russia compared to China, which achieved a remarkable increase in its total high-technology exports during the period 2007–2021. Russia's high-technology exports declined by 7%, and the country consistently ranked third throughout the study period. Meanwhile, China's high-technology exports more than doubled. Despite fluctuations in certain years, which reflected the financial and economic crisis of 2008–2009, the overall trend for China remained upward, in contrast to the downward trend in both the United States and Russia. This situation enhances China's prospects for economic advancement and increases its competitiveness in high-technology exports vis-à-vis the United States and Russia, the world's leading economies in this field.

The sharp decline in high-technology exports in Russia, followed by the United States, alongside China's substantial growth in this sector, has widened the gap among the world's largest economies. Accordingly, China's breakthrough in the growth of its high-technology sector demonstrates the success of its economic policies, which aim at achieving sustainable growth and global economic dominance through the possession of advanced technologies.

Table 02: Share of High-Technology Exports of China, Russia, and the United States during the Period 2007–2021 (% of Manufactured Exports)

Years / Countries	United States of America (USA)	Russia	china
2007	30	7	30
2008	28	7	29
2009	24	10	32
2010	23	09	32
2011	21	08	30
2012	20	09	31
2013	20	11	32
2014	20	12	30
2015	21	16	30
2016	22	16	30
2017	19	12	31
2018	18	11	32
2019	19	13	31
2020	19	09	31
2021	20	10	30

Source: Prepared by the researcher based on World Bank statistics (25/08/2025):

<https://data.albankaldawli.org/indicator/NY.GDP.MKTP.KD?locations=DZ>

4.3 Information and Communication Technology (ICT) Goods Exports and Imports in China, Russia, and the United States during the Period 2007–2021:

The United States, China, and Russia not only export information and communication technology (ICT) goods but also import this category of products.

- Exports of Information and Communication Technology (ICT) Goods in Russia, China, and the United States during the Period 2000–2021 (% of Total Exports):

As shown in Table (03), ICT goods exports as a share of total exports witnessed significant growth in China compared to the United States and Russia. The share of ICT goods exports in China increased from 17% in 2000 to 25.5% in 2021, reflecting a remarkable rise in the country's production of these goods and its ability to compete in international markets. The substantial growth in ICT goods exports in Russia, China, and the United States can largely be attributed to the development of the artificial intelligence (AI) market, the rapid expansion of information, and the unprecedented spread of the Internet. These factors accelerated economic growth by creating new sources of growth generated by the advancements of the Fourth Industrial Revolution, with artificial intelligence being one of its most defining features.

Table 03: Exports of Information and Communication Technology (ICT) Goods in Russia, China, and the United States during the Period 2000–2021 (% of Total Exports)

Years / Countries	Russia	United States of America (USA)	china
2000	0.40	20.00	17.70
2001	0.30	17.60	20.00
2002	0.30	16.10	24.00
2003	0.20	15.80	27.70
2004	0.20	15.20	30.00
2005	0.20	14.30	30.70
2006	0.30	13.50	30.70
2007	0.20	11.70	29.30
2008	0.20	10.60	27.70
2009	0.30	10.70	29.70
2010	0.20	10.60	29.10
2011	0.20	9.50	26.80
2012	0.30	9.00	27.10
2013	0.40	8.90	27.40
2014	0.80	9.00	25.90
2015	0.80	9.40	26.60
2016	0.60	9.60	26.50
2017	0.60	9.50	27.10
2018	0.50	8.90	27.40
2019	0.50	8.70	26.50
2020	0.50	9.70	27.10
2021	0.50	9.10	25.50

Source: Prepared by the researcher based on World Bank statistics (25/08/2025):

<https://data.albankaldawli.org/indicator/NY.GDP.MKTP.KD?locations=DZ>

- Imports of Information and Communication Technology (ICT) Goods in Russia, China, and the United States during the Period 2000–2021 (% of Total Exports):

From Table (04), it is evident that trade imbalances have increasingly widened in China compared to the United States and Russia. In 2006, for instance, imports of ICT goods in China rose to 26.10%, in contrast to the situation in Russia and the United States. Although imports generally exert a negative impact on the economy compared to the benefits generated by exports, the magnitude of this economic effect varies across countries. Accordingly, while the gap initially emerged between Russia, the United States, and China, the overall trend in China indicates a relative stabilization of the trade balance in ICT goods. This stabilization represents a significant determinant of China's economic growth on the one hand, and of the development of the artificial intelligence market on the other.

Table (04): Imports of Information and Communication Technology (ICT) Goods in Russia, China, and the United States during the Period 2000–2021 (% of Total Imports)

Years / Countries	Russia	United States of America (USA)	china
2000	3.70	17.40	20.20
2001	5.10	15.30	21.00
2002	6.00	14.80	23.20
2003	5.30	14.10	24.00
2004	6.40	14.20	23.80
2005	7.80	13.60	25.30
2006	8.70	13.50	26.10
2007	8.60	12.80	24.50
2008	7.80	11.80	21.20
2009	7.30	14.40	21.90
2010	8.50	14.20	20.40
2011	7.20	12.80	18.00
2012	7.50	12.80	19.60
2013	6.80	13.00	20.50
2014	7.90	12.90	19.70
2015	9.10	13.80	23.30
2016	8.40	14.10	23.80
2017	8.70	14.30	22.70
2018	9.90	13.60	22.70
2019	9.40	12.90	22.40
2020	10.40	14.40	24.90
2021	10.00	14.00	23.70

Source: Prepared by the researcher based on World Bank statistics (25/08/2025):

<https://data.albankaldawli.org/indicator/NY.GDP.MKTP.KD?locations=DZ>

5. CONCLUSION

Technological advancements and the growth of smart technologies have contributed to the establishment of a virtual economy driven by information and the Internet revolution. While the positive effects are reflected in enhanced productivity and cost reduction, negative consequences are also evident, particularly in the increasing reliance on machines and their substitution for human labor in various economic activities. China's economic gains, however, can be largely attributed to its balanced policies and its ability to draw lessons from the experiences of others. The efforts of Russia, the United States, and China to expand exports, reduce trade surpluses, and dominate markets constitute one of the key drivers of intensifying economic competition. Artificial intelligence, as a fundamental industry, has emerged as a decisive factor in shaping global leadership. Nevertheless, despite China's considerable economic capabilities, it cannot realistically replace the United States. This is due both to its adherence to the principle of

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