



Research Paper

The Impact of Artificial Intelligence Applications in Education on achieving Economic Development

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Abstract:

In the current study, the impact of artificial intelligence applications in the field of education on achieving economic development was explored, by reviewing previous studies. The descriptive approach was relied upon because it is one of the best approaches that suits the nature of the current study. The results of the study found that artificial intelligence can measure the level of understanding of each student, in addition to that expanding the use of artificial intelligence applications is the path towards achieving economic development because it can raise the educational level.

Keywords: Artificial Intelligence Applications, Economic Development.

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I. Introduction:

Artificial intelligence is an extension of computer science that includes a set of characteristics and attributes related to computer programs and technologies, making it able to simulate the human mind and its mental capabilities. Hence the great importance of artificial intelligence, as artificial intelligence is considered of great importance to the educational process, due to its ability to produce better outputs, and the impact of artificial intelligence extends to the development of the entire educational process by working to integrate artificial intelligence technologies that include display media and others. The concept of artificial intelligence has developed and is of great importance to the educational process, due to its ability to produce better outcomes. The impact of artificial intelligence extends to the development of the entire educational process by working to integrate artificial intelligence techniques that include display media and others. The concept of artificial intelligence has developed throughout history. From the fifties until the second millennium, where the origins of artificial intelligence were since 1950, then it began to take root at the hands of Marvin, Herbert and other scientists, then after the twenty years that followed, the emergence of the cloud-based neural tradition and specialized computational research began, as it spread in the industrial world and security systems, Then, in recent years, the world has witnessed tremendous development in technology, extending to deep machine learning processes, which now possess enormous capabilities that exceed human capabilities[1].

Economic development is a broad and multidimensional concept that encompasses the improvement of the economic well-being and quality of life of a nation, region, or community. Economic development involves increasing the production and consumption of goods and services, creating more jobs and income opportunities, reducing poverty and inequality, enhancing human capital and social welfare, and protecting the environment. Economic development is influenced by various factors such as natural resources, human capital, technology, institutions, policies, culture, and history. Economic development is not the same as economic growth, which is a phenomenon of market productivity and increases in GDP. Economic growth is one aspect of the process of economic development, but it does not necessarily reflect changes in the quality of life or the distribution of income. Economic development requires a holistic and interdisciplinary approach that involves collaboration among various factors such as governments, private sector, civil society, international organizations, and academia[2].

So that, the current study aimed to examine the impact of artificial intelligence applications on achieving economic development as follows:

II. Literature Review

Artificial intelligence:

Considering the recent developments in machine learning technology and the integration of cloud computing capabilities and big data, artificial intelligence has begun to gain significant momentum and expand its reach by providing easy-to-use systems for organizations of all sizes and shapes[3].

The beginning of the emergence of this field dates to the early fifties of the twentieth century AD, when a group of scientists took a new approach to producing intelligent machines based on recent discoveries in neuroscience, the use of new mathematical theories of information, and relying on the invention of devices based on the essence of mathematical logic. The first recorded event in the field of artificial intelligence was the publication of a scientific research entitled *Computing Machinery and Intelligence* by the British mathematician Alan Turing, where he invented a test that if the device passes, it is classified as intelligent. This test consists of questions asked by a person known as the judge and directed to another person. And a computer device at the same time, since if the referee is unable to distinguish between a person and a device, then the device passes the intelligence test or the logic test and is classified as an intelligent device [4].

In 1956, a conference on artificial intelligence was held at the American University of Dartmouth, where amazing computer programs and devices were presented that amazed the audience as they proved logical theories and spoke in the English language. After that, the US Department of Defense in the mid-sixties funded research in the field of artificial intelligence out of optimism about the bright future of this field. In the mid-twentieth century, a small number of scientists began to explore a new approach to building intelligent machines, based on recent discoveries in neuroscience, a new mathematical theory of information, the development of cybernetics, and, above all, by the invention of the digital computer, a machine that could simulate the human computational thinking process[5].

Artificial Intelligence definition is a branch of computer science concerned with studying and creating computer systems. Artificial intelligence exhibits some forms of intelligence, such as systems that learn new concepts and tasks. Artificial intelligence contributes to exploring and extracting useful results around the world[6]. Also, it is the science that is concerned with studying the ideas that enter machines so that they are able to respond to stimuli in a manner consistent with traditional responses from humans, so that machines become able to evaluate, choose, and criticize with human skill[7].

As for AI principles, Google is one of the first companies to use artificial intelligence and machine learning in its products, and it is the most advanced company in the world in the fields and sciences of artificial intelligence. In 2018, the company published the basic (non-technical) principles on which the company relies in developing artificial intelligence technologies. These principles can be mentioned as follows:

1) **Public Benefit:** The design of artificial intelligence and its algorithms must have a goal and possible possibilities for use that are generally in everyone's interest, and that the benefits for most people outweigh the harms. This idea is consistent with the European and Eastern social orientation and contradicts the individualistic aspect (increasing individual interest) that is important to American capitalism. This indicates a global approach to Google that is accepted by everyone. Also, with this principle, the company ruled out the idea of developing weapons using artificial intelligence[8].

2) **Avoid unfair bias:** This is a problem that most machine learning algorithms face, as they rely heavily on data. If the data is biased toward a certain group of people, a certain orientation, or sometimes a certain race, an effort should be made to avoid unfair repercussions on the affected group. Example: Some facial recognition techniques may fail to recognize black people because they are not represented in the data used to train artificial intelligence algorithms. Google emphasizes the importance of diversity in data sources by data collectors and racial diversity to avoid unfair bias that may oppress certain ethnicities or harms a certain group of people in crucial decisions such as employment or the diagnosis of a certain disease[9].

Regarding AI Applications used in education, The digital and dynamic nature of artificial intelligence provides a different scope that cannot be found in the typical traditional school environment today. Applications of artificial intelligence in education will enable the discovery of new frontiers of learning and accelerate the creation of innovative technologies[10]. Among the applications of artificial intelligence in education we find, for example,

1. **Intelligent Content:** A group of companies and digital platforms are currently interested in creating smart content by converting traditional educational books into smart books closely related to the educational goal[11]. In this context, we can mention, but are not limited to:

- Content Technologies Inc., an artificial intelligence development company specializing in business process automation and smart education design, created a set of smart content services for education.
- Cram101, for example, uses AI technologies to help disseminate textbook content via intelligent study guides that include chapter summaries, valid practice tests, and multiple choices.

- NursingEd101 uses AI to help nurses and nursing students spend less time finding important information and more time retaining information. Whether you're a first-year student or studying for your licensing exam, CTI technology helps you feel more confident About the subject.

2. Intelligent education systems: Katie Hafner defines intelligent learning systems, known as ITS, as systems that include educational programs that contain an element of artificial intelligence. The system tracks students' work and guides them whenever necessary by collecting information about the performance of each individual student. It can also highlight strengths and weaknesses. Each learner has, and the necessary support is provided to him at the appropriate time. One of the basic models in learning is the interaction interface model[11]: its characteristics can be defined as follows:

- Linking the student and the smart educational system on the one hand, and the various parts and components of the program on the other hand.
- Giving the smart educational system the possibility of mixed, two-way dialogue between it and the student.
- Integrating and including the student in the learning process through attractive presentation methods and means, flexibility and diversity of presentation of the educational material in a way that suits the student's individuality and requirements, and interaction and dialogue with him in the natural language that he understands.
- Providing various methods and patterns for questions and problems and ways to answer them in scientific reality.

Despite much talk and fear, machines are unlikely to replace teachers anytime soon. Instead of machines being a means to help overcome the many structural barriers that make it difficult to ensure effective teacher access to every student, school systems face a number of challenges, including but not limited to teacher shortages, lack of clear methods for developing high-quality teachers, and even The best teachers struggle to meet the diverse learning needs of their students or find time to focus on developing students' deeper learning and non-cognitive skills amid pressures to cover basic education.As for the classroom itself, the options for “specialized services based on needs” provided by artificial intelligence technologies would help improve students' enjoyment during classes and improve their grades at the same time. Well-trained robots can complement the role of experienced teachers in providing private lessons and additional classes to strengthen and develop students' skills.Teachers often suffer from a lot of office work, such as grading exams and evaluating assignments, but artificial intelligence can take care of many of these tasks, taking the time needed for correction and administrative work to devote more time to students.It is expected that classrooms will soon move from the traditional framework of learning to using a combination of robots and artificial intelligence designed as needed. A large and increasing percentage of students will benefit from robots that are characterized by continuity and flexibility. Classroom teachers will also be freed from administrative matters and will be free to focus on students[12].

Virtual reality has many benefits for the learner, as this technology enables them to take a virtual tour from one place to another, and the main strength of this method is that it allows users to see this place through 360 degrees and explore its elements in three dimensions in a way that allows interaction with the scene through hot spots, and this is different from simply participating in Display information on the computer screen.It is also believed that virtual reality technology has the ability to develop student-centered self-learning by exploring a world that is closer to reality and more interactive. Through it, the learner is also able to move and wander within the scene, which helps him develop his ability to visualize, understand, and perceive complex scientific data that does not give Studying it in two dimensions provides the required understanding, especially in scientific subjects[13]. Virtual reality importance can be mentioned in the following points:

- Human capabilities are one of the most important factors that are relied upon to evaluate a country's readiness to benefit from artificial intelligence technologies, and that using and developing artificial intelligence applications requires a group of talents with advanced skills in mathematics, analysis, and data science.
- Expanding the uses of artificial intelligence and the economic gains it achieves is the way to achieve sustainable development goals. Artificial intelligence applications can advance many economic sectors, analysis, and decision-making, enhance their efficiency, and increase their productivity, which helps in confronting economic problems and reducing hunger and poverty. Achieving economic growth and improving living standards for individuals in all societies, to achieve sustainable development goals.
- Artificial intelligence represents a qualitative leap in the fields of theoretical and applied sciences, as it has been able to simulate human mental abilities and their modes of operation in some processes of perception and logical deduction, as well as learning and acquiring experiences and skills, through several technologies and programs characterized by diversity and continuous innovation, known as systems. artificial intelligence.

Economic Development:

It is a process of fundamental transformation in the economic structure of society, as it is not possible - according to the proponents of the concept - to solve issues of growth and distribution in isolation from the mechanisms of capitalist market construction that control those issues. Changing those mechanisms requires a fundamental transformation in the prevailing method of production with its components of elements such as raw materials, productive machines, and infrastructure. And the activities of employing these elements in the production of goods and services within the framework of available technology, the social division of labor, and patterns of demand. Finally, social relations coordinate the activities of individuals by determining the nature of the social structure. This social structure reflects the goals of society or the goals of its leaders in a specific historical period. Therefore, the difference in these goals from one time to another and from one place to another necessarily leads to differences in patterns of productive relations and directions of economic activity, as well as the relative value of each factor of production[14].

There is a difference between economic development and economic growth, Economic development began to be defined mainly in terms of its effects on achieving justice, providing job opportunities, and developing growth strategies. That is, economic development includes, in addition to the economic aspect, other goals, especially raising the standard of living by meeting basic needs. Development in the eighties of the last century began to be viewed as including the social aspect in addition to the economic aspect, and its definition now includes common issues, which are:

- It is a relative issue, depending on the surrounding circumstances, within the possible data, and within the achieved time periods.
- It is a complex process that varies according to societies, countries, and the exploitation of energy and primary resources.
- A comprehensive process for various sectors of society.
- Developing capabilities and providing basic needs is the primary goal.

Here it can be clarified that growth is the quantitative improvement of the entire economy, including resources, demographic growth, and labor productivity. This growth requires a series of changes in the economic structure to ensure its continuity, and that development is a series of changes and adaptations without which growth stops. It can also be considered a multiple process. Dimensions, which include making radical changes in social, behavioral, and cultural structures and political and administrative systems along with increasing rates of economic growth, achieving justice in the distribution of national income, and eradicating the root of absolute poverty in a society.

This concept means that development is deeper than growth, as it necessarily includes the outcome of profound changes that affect the economic, social, and cultural structure... that is, the future of social development. From it, it can be said that development is the qualitative shift from an economy characterized by backwardness and deprivation to an economy characterized by efficiency, improvement, and development[15]. There are some problems facing economic development financing[16], the most important of which are the following:

- Tax evasion, which leads to depriving local groups as well as the state of large sums that contribute to investment in all magazines due to people's evasion.
- The lack of actual and real independence of local units in obtaining financial resources, as their freedom is restricted by the control of the central authority in imposing local taxes and fees and on borrowing. Their freedom is also restricted by monitoring their budget and the aspects of spending their various revenues.

There are some obstacles to achieving economic development:

- Lack of diversification of the source of income. Mansharamani considered that the roots of these developments go back to the increase in production and the predominance of supply over demand in China, which led to the world being flooded with goods far exceeding demand, in addition to the adoption of modern technologies and alternative energy technologies at the world level and their production in excess of real consumption, stressing that Increasing production exceeding demand and flooding markets with goods is one of the negative effects that resulted from the irrational use of modern technologies in industry. He added that these factors exacerbate population growth and encourage the population to move to urban areas, and increase rates of aging, which leaves its impact on consumption patterns and employment rates. It constitutes demographic pressure and greater economic cost. Mansharamani referred to that our world today is suffering from a crisis of inequality, such as the great disparity in supply and demand in the markets, and the widening gap in social and living standards, which has led to different reactions resulting from the decline in economic returns from some countries and individuals, which in turn creates an environment conducive to the spread of populism, nationalistic tendencies, and conflicts. Politics, which brings people to the streets. He pointed out that sectarian trends and self-sufficiency policies in their various forms leave a major impact on the global trade system and economic dynamics around the world. In his opinion, Mansharamani enumerated the indicators that prove the

possibility of a global economic crisis in the coming years and considered that the most prominent of them is the slowdown in the Chinese economy and the accumulated debts that burden it. He stated that Chinese bad debts reached 600 billion yuan in 2017. The existing economic and financial policies also lead to a crisis of confidence and paralysis in the boards of directors of major investment companies due to the inability to predict the possibility of achieving investment returns, which leads these companies to accumulate their investments in certain areas rather than others and the decline in economic diversification, or to refrain from investing for fear of risking their money capital[17].

- Population explosion and government obstacles: The population problem refers to an irregular and ill-considered increase in the population, as the United Nations Development Program (UNDP) revealed differences that would disrupt the pattern of distribution of global resources, as the rapid population increase devours any developments in various fields, whether industrial, agricultural, or food. This is in addition to its weak contribution to production rates and its lack of proportion to high consumption rates[18].

III. Methodology

This study relied in its entirety on the descriptive approach because it is one of the best approaches that suit the nature of the current study to learn about artificial intelligence techniques in the field of education and their impact on economic development. This approach is not limited to collecting and organizing data, but rather goes beyond that to analyzing it and linking its implications, to reach To conclusions that contribute to understanding this reality, and within the framework of this approach, the factors and relationships associated with the study problem can be identified and interpreted in order to conclude a future vision that contributes to economic development, which leads to increasing the effectiveness of the role of artificial intelligence, and enabling it to successfully increase economic development in light of contemporary life changes.

IV. Results

By reviewing previous studies, the researcher concluded that there are a group of results for the impact of AI applications on achieving economic development as follows:

1. Artificial intelligence can measure the level of understanding of each student individually.
2. Expanding the uses of artificial intelligence and the economic gains it achieves is the way to achieve sustainable development goals. Artificial intelligence applications are capable of advancing education.
3. Artificial intelligence represents a qualitative leap in the fields of theoretical and applied sciences, as it has been able to simulate human mental abilities and their modes of operation in some processes of perception and logical deduction, as well as learning and acquiring experience and skills, through several technologies and programs characterized by diversity and continuous innovation, known as artificial intelligence systems.

V. Conclusion:

Artificial intelligence has been able to bring about a terrible technological revolution in various fields, and in the field of education, some applications of artificial intelligence have emerged that have been able to benefit all elements of the educational process, especially students in schools and universities. It is expected that in the future, artificial intelligence will penetrate more and more into all fields, limiting human work to managing artificial intelligence applications. Given the technological revolution brought about by artificial intelligence applications, this has had a positive impact on achieving economic development for many countries that have incorporated artificial intelligence and used it primarily in various fields.

VI. Recommendations:

1. Creating a government authority under the name of the Ministry of (Artificial Intelligence Technology) specialized in digital transformation and artificial intelligence to assume responsibility for this file.
2. Adopting an independent subject for artificial intelligence in schools and universities, to qualify outstanding students accepted to universities during the next ten years who possess sensory understanding and manual skills.
3. Re-engineering the future of education in universities through smart technology, innovation, and scientific research.
4. Joint efforts between governmental, educational and media institutions to raise community awareness of the basics of this field to create a digital citizen capable of dealing with such technologies.
5. Establishing a university characterized by high-precision specifications, in terms of competence and scientific and cognitive discipline, and its mission will be to graduate outstanding students from all countries of the Islamic world, with those minds working to provide their services to solve the problems of the Muslim community without exception.

References

- [1]. Saurabh, J &Topl, E, "Information and artificial intelligence" Journal of The American College of Radiology. 15(3) (2018):509 – 511.
- [2]. Krueger, A. O. and Myint, Hla. "Economic development." *Encyclopedia Britannica*, September 13, 2023.
- [3]. Armer, Paul, Computer Aspects of Technological Change, Automation, and Economic Progress, Santa Monica, Calif.:RAND Corporation,P-3478, 1966 As of December 8, 2021.
- [4]. Agnieszka Krainska, Legal personality and artificial intelligence (2018, NewTechLaw). Available at: newtech.law/en/legal-personality-and-artificial-intelligence/ (Accessed: 1 January 2022).
- [5]. Abu Zakih, Khadija Mansour. Systems of expertise in artificial intelligence and their application in teaching and education: Journal of Faculties of Education, Vol. 12, (2018) pp. 111-126.
- [6]. SHUKLA SHUBHENDU, S.; VIJAY, Jaiswal. Applicability of artificial intelligence in different fields of life. International Journal of Scientific Engineering and Research, 2013, 1.1: 28-35.
- [7]. ASHEHRI, Rana. Governance of Artificial Intelligence in KSA (NEOM as a model). International Journal of Advanced Studies, 2019, 9.1: 64-81.
- [8]. Mark Fenwick, Marcelo Corrales, and Nikolaus Forgo, Robotics, AI and the Future of Law (2018, Kyushu University, Springer).
- [9]. Scholten, Nina. "The Robo-Criminal." The Journal of Robotics, Artificial Intelligence & Law 2.
- [10]. Arnett, Thomas. "Teaching in the machine age." How innovation can (2016).
- [11]. Peart, Andy. "Homage to John McCarthy, the father of artificial intelligence (AI)." Retrieved from Artificial Solutions: <https://www.artificial.solutions.com/blog/homage-to-john-mccarthy-the-father-of-artificial-intelligence> (2017).
- [12]. Kaplan, Andreas, and Michael Haenlein. "Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence." Business horizons 62.1 (2019): 15-25.
- [13]. Kaplan, Andreas, and Michael Haenlein. "Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence." Business horizons 62.1 (2019): 15-25.
- [14]. Peeters, Jef. "Sustainable development: A mission for social work? A normative approach." Journal of Social Intervention 21.2 (2012): 5-22.
- [15]. Mohamed, Zergoune, Okba Abdellaoui, and Nawal Ben Amara. "Determinants of the Algerian Economy: Autoregressive Distributed Lag Approach." International Journal of Economics and Financial Issues 8.5 (2018): 7.
- [16]. Bakari, Sayed, "The Relationship between Export, Import, Domestic Investment and Economic Growth in Egypt: Empirical Analysis", Business Administration and Business Economics, Issue 2(36), (2017) PP. 34 – 43.
- [17]. Economist Intelligence Unit, The automation readiness index: Who is ready for the coming wave of automation?, Report, Economist Intelligence Unit, London, 2018. https://new.abb.com/docs/librariesprovider138/events/ab_b_ari_report.pdf
- [18]. Sander; Sunny; B; Brimelow, An Introduction to pupation College; Growth of Agriculture, California State. University, 2013.