The Effects of Using Artificial Intelligence Technologies on The Growth and Development of Emerging Institutions

Dr. Bouzekri Achour[1], Dr. Omrane Dalila Batoul Manel[2]

[1]*University Tissemsilt (Algeria), Email: amineaachour@gmail.com*
[2]*University Djelfa (Algeria), Email: Batoulsp@gmail.com*

Abstract

The world is witnessing a technological revolution led by artificial intelligence (AI), which has become a pivotal tool in improving the performance of emerging institutions. These institutions face challenges such as limited resources and intense competition, which makes AI an effective means of analyzing data, automating processes, and providing innovative solutions that ensure superiority in dynamic markets.

In this study, we review the role of artificial intelligence in enhancing the work of emerging institutions, and how to exploit it to improve performance and make strategic decisions. We also address the challenges that emerging institutions may face when adopting this technology, and propose innovative solutions to overcome them. By shedding light on this topic, we aim to clarify the importance of artificial intelligence as a key factor in achieving growth and innovation in emerging institutions

Keywords: Artificial Intelligence, Innovation, Development, Startups

Introduction

In our current era, the world is witnessing an unprecedented technological revolution, and Artificial Intelligence (AI) is one of the most prominent manifestations of this revolution. Thanks to the rapid developments in machine learning and data analysis technologies, AI has become a powerful tool that impacts various economic and social sectors. Among these sectors, startups stand out as a dynamic environment that greatly benefits from the potential provided by AI.

Startups face many challenges related to intense competition, limited resources, and time pressure to achieve success. This is where artificial intelligence comes into play as an innovative tool that helps these organizations improve efficiency, reduce costs, and innovate products and services that meet market expectations. By analyzing data, automating processes, and personalizing customer experiences, startups can achieve competitive advantages that enable them to excel in ever-changing markets.

The problem: How can artificial intelligence technology develop emerging institutions?

Axis One: The concept of artificial intelligence: Artificial intelligence is one of the most important branches of computer science that aims to simulate human intelligence using systems and software based on advanced algorithms. Artificial intelligence is characterized by its ability to learn from data, think logically, make decisions independently, and solve problems in a way similar to human thinking. This enables these systems to perform complex tasks, such as analyzing big data, interacting with users in natural language, and predicting future outcomes based on past data. (01)

Artificial intelligence includes several advanced techniques, including machine learning, which allows systems to improve their performance without explicit programming by learning

from previous experiences, and deep learning, which relies on neural networks inspired by the human brain to analyze data and understand patterns. The importance of artificial intelligence is evident in its ability to provide innovative solutions in various fields. In medicine, artificial intelligence can analyze x-ray images to detect diseases early. In industry, it contributes to improving efficiency by automating routine processes. In business, it helps analyze market data and personalize the customer experience.

Artificial intelligence is one of the main drivers of the Fourth Industrial Revolution, with diverse types of adaptation to the dynamic business environment that will want to sustain. Despite the challenges related to privacy and ethics, the opportunity for continuous professional and technological progress represents the quality of life at the level of individuals and societies (02).

The role and importance of artificial intelligence Artificial intelligence is considered one of the main drivers of innovation and development in our current era, as it has become a vital tool that contributes to improving efficiency and providing effective solutions to complex problems. Thanks to its ability to analyze huge amounts of data accurately and quickly, artificial intelligence enables organizations and individuals to make informed decisions based on analytical insights, which enhances their ability to adapt to changing work environments.

The importance of artificial intelligence is evident in its ability to automate routine tasks, saving time and effort and reducing human errors. In the field of medicine, it contributes to improving diagnosis and treatment by analyzing X-ray images and using algorithms to predict diseases. In industry, it enhances productivity through smart robots and efficient supply chain management. In the field of education, it provides personalized educational tools that meet the needs of each student, which improves the quality of learning. (03)

In addition, artificial intelligence plays a major role in addressing global challenges, such as climate change and natural resource management, by providing smart technologies to analyze environmental data and develop sustainable solutions. It also contributes to improving government and commercial services by providing personalized and advanced experiences for users. (04)

Despite the challenges associated with the use of artificial intelligence, such as privacy and ethics of use, its broad benefits make it an essential element in building a future based on innovation, efficiency and sustainable development. Artificial intelligence is used in many diverse fields, where it has proven effective in improving efficiency and providing innovative solutions in various sectors. The most prominent areas of artificial intelligence include the following:

1.   Medicine and Healthcare:
+   Improving medical diagnosis using medical image analysis technologies (such as X-rays and MRIs).
+   Designing personalized treatment plans based on patient data.
+   Developing assistive systems such as surgical robots or smart medical consultation applications.

2.   Education:
+   Providing interactive educational platforms based on personalized learning.
+   Analyzing student data to identify weaknesses and provide appropriate content for each student.
+   Using artificial intelligence programs to improve students' skills in languages or mathematics.

3.   **E-commerce and Marketing** :

+ Personalize customer experience using recommendation systems (such as suggested products in online stores).
+ Analyze customer behavior to improve marketing strategies.
+ Automate customer service using chat bots.

4. Industry and Manufacturing :
+ Automation of production lines using smart robots.
+ Monitoring product quality and improving the efficiency of industrial processes.
+ Data analysis to predict failures and reduce downtime.

5. Transportation and Communications:
+ Developing self-driving cars that rely on artificial intelligence to make decisions in real time.
+ Improving traffic management using data analytics.
+ Providing advanced solutions in the field of logistics and supply chains.

6. Cyber security :
+ Detecting and preventing cyber attacks using machine learning-based systems.
+ Enhancing protection by recognizing abnormal patterns in networks.

7. Agriculture:
+ Improving smart agriculture using soil and weather monitoring technologies.
+ Predicting farm yields and improving resource efficiency.
+ Using robots for planting and harvesting crops.

8. Financial and Banking Services:
+ Detect fraud by analyzing banking data in real time.
+ Provide personalized financial and investment recommendations to customers.
+ Automate routine banking operations, such as loan processing.

9. Games and Entertainment:
+ Develop AI-powered games to provide more interactive and realistic experiences.
+ Create new entertainment content using generative AI.

10. Scientific Research and Innovation :
+ Accelerate scientific research through big data analysis.
+ Help develop new drugs using computer simulation.

Axis Two: Startups :The concept of start-ups:
Start-ups are new companies that are established with the aim of providing innovative solutions to market needs or solving existing problems in unconventional ways. These companies are characterized by their focus on innovation and creativity in developing new products or services, and operate in an unstable business environment characterized by high risks and great opportunities. Start-ups usually start with a strong entrepreneurial idea that seeks to achieve digital transformation or develop modern technologies, which makes them rely on advanced technological strategies to achieve their goals. (05)

These companies are usually small in size in their early stages, with limited financial and human resources, which makes them in need of external financing, such as venture capital or funding from business incubators and investors. Despite these limited resources, start-ups enjoy high flexibility and the ability to adapt to rapid changes in the market, which helps them grow quickly, if they succeed in meeting the needs of the target market. Start-ups often face challenges such as intense competition, difficulty attracting talent, and financial instability in the early stages, but they have a unique ability to innovate and discover new solutions that may change markets and industries entirely. Thanks to this role in achieving innovation, these companies are considered one of the engines of economic growth in the modern era, as they

contribute to providing new job opportunities and enhancing competitiveness in various fields. (06)

The importance of start-ups:

Start-ups play a vital role in the economy and society in general, as they contribute significantly to innovation and economic growth. Their importance lies in several main aspects:

1. Stimulating innovation and technological development Startups are among the most prominent drivers of innovation, as they seek to provide new and innovative solutions using technology. This innovation can change industries and create new opportunities in various fields such as healthcare, education, transportation, and energy. (07)

2. Creating new job opportunities As these enterprises grow, many new job opportunities are created, whether in technical, administrative, or consulting jobs. As start-ups expand, the need for specialized competencies increases, which enhances the labor market.

3. Enhancing competitiveness in markets Start-ups often enter markets by offering products or services that differ from traditional options, which encourages larger companies to improve their products and increase their competitiveness. This leads to raising the level of quality in local and international markets. (08)

4. Contributing to sustainable economic growth Thanks to innovation and rapid growth, start-ups contribute to strengthening the local and global economy, and attract investments that contribute to achieving sustainable growth. They also drive development in the geographical areas that witness these entrepreneurial activities.

5. Attracting Investment Startups, especially those offering innovative solutions in the technological or sustainable fields, attract huge investments from venture capital and angel investors, providing them with the financial resources needed to expand their businesses.

6. Reshaping Industries Startups are able to change the face of traditional industries by introducing new business models. For example, in areas such as e-commerce, artificial intelligence, and renewable energy, these companies can create radical changes in the way businesses are conducted.

Global Startup Models:

1.   Uber

Uber is a prime example of a startup that has successfully redefined the transportation industry. The company started with an innovative idea of using smartphones to connect passengers with drivers through a simple app, and has succeeded in changing the concept of mobility in major cities around the world. Today, Uber has become one of the largest companies in the transportation and food delivery industry.

2.   Tesla

Tesla is a startup company focused on manufacturing electric cars and sustainable batteries. With innovation in electric car technology, Tesla has been able to become one of the largest companies in the global automotive industry. It has also contributed to accelerating the shift towards renewable energy and reducing dependence on fossil fuels.

3.   Airbnb

Airbnb began as a startup that provided a platform for people to rent or lease residential spaces in an unconventional way, which helped reshape the travel and tourism industry. It has

contributed to revolutionizing the concept of accommodation by providing economical and unique options for travelers around the world.

4.   Spotify

Spotify is a music streaming startup that has transformed the way people listen to music. With its monthly subscription model, Spotify has changed the music industry and made listening to digital music more accessible and affordable than traditional methods.

5.   PayPal

PayPal started out as a startup with the goal of providing a secure online payment service, and it has changed the way financial transactions are conducted online. Today, PayPal is one of the largest electronic payment platforms in the world.

Axis Three: Startups in Algeria:

 Startups in Algeria are small and new companies that focus on providing innovative solutions in various sectors, such as technology, trade, and industry. These companies are characterized by their focus on innovation and the use of technology to achieve rapid growth and achieve excellence in the market. Despite the challenges they face, such as limited funding, bureaucracy, and lack of specialized skills, the incubator environment for these companies has begun to improve thanks to government support through initiatives such as "StartUp Algeria" and private incubators. Startups in Algeria play an important role in supporting the national economy by creating new job opportunities, improving the level of innovation, and stimulating economic growth. (09) Startups in Algeria have witnessed remarkable development in recent years, especially with the government's increasing interest in supporting this vital sector. However, there are challenges and opportunities facing these companies.

Here is a summary of the state of startups in Algeria: (10)
Opportunities:
 1. Increased government support:
✓   Launching a special law for startups to facilitate their creation and management.
✓   Providing tax exemptions and direct and indirect financing.
✓   Programs such as the "Startup Fund" that helps support innovations.
2.   Emerging innovation climate:
✓   The emergence of many incubators and business accelerators such as "Algeria Ventures".
✓   Organizing events and competitions such as the "National Startup Award".
3.   Large local market:
✓   Algeria is considered an emerging market with consumers hungry for technology and innovative services.
4.   Presence of youth competencies:
✓   A large segment of young people who are technically qualified in fields such as programming, engineering, and artificial intelligence

Challenges:
1.   Bureaucracy:

✓ Despite the existence of the Startup Law, startups face administrative obstacles and difficulty in procedures.
2. Lack of funding:
✓ Access to funding in the early stages of projects is still limited, despite government initiatives.
3. Weak technological infrastructure:
✓ Problems with internet services and speed, which affects digital projects.
4. Traditional mentality:
✓ Some cultural challenges such as preferring government jobs to the risk of starting a private project.
5. Weak connection to the international market:
✓ Lack of integration with global markets and lack of experience in dealing with foreign clients.

Future directions:
❖ Improve policies to more effectively support startups.
❖ Invest in improving digital infrastructure.
❖ Promote a culture of entrepreneurship among young people.
❖ Link startups to international networks and institutions to increase funding and growth opportunities.

The fourth axis: The impact of using artificial intelligence tools on the development of emerging institutions
The use of artificial intelligence (AI) tools is considered one of the decisive factors in the development of emerging institutions, as these tools can make a big difference in improving efficiency, accelerating growth, and increasing competitiveness. The following is a presentation of the impact of artificial intelligence on emerging institutions. (11)
1. Improving operational efficiency
➢ Process automation:
AI tools help automate routine tasks such as inventory management, customer service, and data analysis.
This automation reduces operational costs and frees up additional time to focus on innovation.
➢ Improving human resource management:
Using AI in recruitment and assessment helps select the best talent based on data analysis and emotional intelligence.
2. Data analysis to make strategic decisions
➢ Market forecasting:
AI tools can analyze market trends and big data to forecast demand and identify business opportunities.
These analyses help startups offer innovative products or services that are in line with customer needs.
➢ Risk management:
AI can analyze financial and business data to anticipate risks and develop strategies to avoid them.

3. Improving customer experience
➢ Chatbots :

Startups use AI-powered chatbots to provide instant customer support around the clock.

This improves customer satisfaction and reduces the need for a large support team.

➢ Personalization:

Using machine learning technologies, companies can offer customized products and services based on customer behavior and interests.

4. Accelerating innovation and product development

➢ Product design:

AI helps design products based on previous models and technological innovations.

➢ Software testing and development:

AI tools help detect bugs and improve software quickly, accelerating the market launch process.

5. Opening new horizons for growth and expansion

➢ Access to new markets:

AI makes it easier to analyze international markets, helping startups expand globally.

➢ Innovative business models:

Using AI can stimulate the creation of new business models based on data and analytics.

6. Reducing costs and increasing revenues

➢ AI reduces operational costs by improving operational efficiency.

➢ This leads to improved profit margins and increased revenues by providing more effective services and products.

Algerian models:

There are a number of startups in Algeria that have emerged as successful examples of using innovation and technology to meet the needs of the local and international market. Here are some prominent models and their definitions:

1. Yassir:

➢ Definition:

A technological platform that provides ride-hailing and delivery services through an electronic application.

• Role:

It is one of the most prominent Algerian startups that has succeeded in attracting large funding, and it is currently operating in several African and European countries.

• Impact:

It has helped facilitate transportation within Algerian cities and created job opportunities for drivers.

2. Ogrant:

➢ Definition:

An electronic platform that connects those seeking funding with various funding sources, including donors and institutions.

❖ Role:

Helps startups and non-profit organizations obtain the resources needed to implement their projects.

❖ Impact:

It has enhanced access to financial and technical support.

3. Pharmacity:

➢ Definition:

A digital platform that connects pharmacies with consumers to provide medicines and health products online.

❖ Role:

It contributes to facilitating citizens' access to medicines, especially in remote areas.

❖ Impact:

It reduced the time it takes to search for medicines and helped pharmacies manage their inventory effectively.

4. InstaDeep:

➢ Definition:

A company working in the field of artificial intelligence, founded in Algeria and expanded internationally, specializing in deep learning and machine learning solutions.

❖ Role:

Provides innovative solutions to major companies in various sectors, including health, transportation and finance.

❖ Impact:

It has become a global leader in the field of artificial intelligence after strategic partnerships with major companies.

5. Djoubelane:

➢ Definition:

An electronic recruitment platform that helps companies find local talent.

❖ Role:

Focuses on hiring Algerian competencies and linking them with emerging and small companies.

❖ Impact:

Contributed to reducing unemployment among youth and enhancing job opportunities in the local market.

6. Green Factory:

➢ Definition:

A startup specialized in developing innovative solutions for renewable energy and smart agriculture.

❖ Role:

Provides technologies to improve agricultural productivity using green technology.

❖ Impact:

Helped promote sustainability and environmental protection in rural areas.

Conclusion

Artificial intelligence is showing its pivotal role in enhancing the growth of emerging companies and achieving a radical transformation in the way they operate. By employing advanced technologies to analyze data, automate processes, and provide innovative solutions, emerging companies have become able to meet economic challenges and global competition efficiently and flexibly. In addition, the role of emerging companies, especially in Algeria, is highlighted in strengthening the local economy and developing human resources through innovation and creativity. With continued government support, technological developments, and increasing awareness of the importance of entrepreneurship, emerging companies are expected to witness further growth and contribute to developing industries and achieving sustainability. In light of these developments, it becomes necessary to focus on improving the regulatory and technological environment, and to benefit from artificial intelligence as a

strategic tool to achieve excellence. Thus, emerging companies can play a greater role in building a strong and prosperous economic future.

Footnotes

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