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The role of Artificial intelligence in supporting the growth and competitiveness of startups and innovative projects case of Algeria

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Abstract

This study discusses the intersection of Artificial intelligence (AI) and entrepreneurship in Algeria, with a particular focus on opportunities AI offer for startup growth and the challenges associated with its adoption. Furthermore, this research shows the government's efforts to integrate AI into national development strategies, in spite of the absence of a comprehensive legal framework regulating AI in Algeria, which creates uncertainty regarding liability, accountability, and data protection. The study contributes by highlighting the need for regulatory reforms aligned with international standard to create a supportive environment where AI can responsibly foster startup growth in Algeria.

Keywords: Startups, Artificial intelligence, innovation, entrepreneurship, legal challenges.
JEL Classification Codes: O33, L26, O32, M13, O57.

Introduction

In previous years, startups around the world have witnessed rapid transformations driven by technological innovation, with Artificial Intelligence (AI) emerging as a key enabler of businessgrowth and competitiveness. The integration of AI within the startup ecosystem has gained significant attention previously, as startup increasingly seek innovative solutions to improve operational efficiency, enhance customer loyalty, and foster the scalability.

In Algeria, the startup ecosystem has been evolving steadily, supported by government initiatives, incubators, university-linked innovation hubs, and increasing entrepreneurial interest among youth. However, the integration of AI into the operations of Algerian startups remains relatively limited due to various challenges that hinde the full exploitation of AI's potential to drive innovation and competitiveness within the Algerian startups.

This research aims to explore how AI can support the development of startups in Algeria by enhancing their productivity, scalability, and competitive edge in both Algeria and global markets. Further more the purpose of this research is to investigate how AI can make a positive impact in empowering business startups in Algeria particularly within the framework of the country's new strategy for implementing AI in the business sector.

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Research problem

The central questions guiding this study are:

- **In what ways can AI support business startups, especially within the Algerian context?".**

Sub-questions: Through the principal question outlines above, this research seeks to address the following sub-questions:

- To what extent are Algerian startups adopting AI technologies?
- What benefits and challenges are associated with AI integration?
- What policy measures or ecosystem improvements are needed to accelerate AI-driven innovation in startups?

Research Importance

The importance of this study lies in its focus on a contemporary and multidimensional topic—namely, the role of artificial intelligence (AI) in supporting the growth and competitiveness of startups and innovative projects in Algeria. From an **academic perspective**, the study aims to enrich the scientific literature on the relationship between artificial intelligence and startups, particularly within the **Algerian and Arab contexts**, which still lack in-depth research in this field. This contribution will help broaden the theoretical understanding of how intelligent technologies influence innovation dynamics and institutional growth. From a **practical standpoint**, the study holds considerable importance by offering **evidence-based recommendations for policymakers,** which can contribute to the design of effective digital policies that foster a **digital business environment** and encourage startups to adopt AI technologies to enhance their performance and strengthen their competitiveness. Finally, from an **economic perspective**, the study contributes to supporting economic diversification **efforts** and the transition toward a **knowledge- and innovation-based economy**, in alignment with national strategies aimed at achieving **sustainable development driven by technology and creativity.**

Research objectives

The purpose of this research study is to scientifically investigate and gain a deeper understanding of the ways in which AI can empower business startups, with particular focus on the Algerian context.As Algeria seeks to diversify its economy and foster a knowledge-based entrepreneurial ecosystem, understanding the role of AI becomes both timely and essential. In addition, this study seeks to contribute to the growing discourse on digital transformation by highlighting how AI can serve as a catalyst for sustainable startup growth within emerging economies such as Algeria.

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Literature Review

It is observed that in recent years, both globally and regionally—including in Algeria—considerable attention has been devoted to the transformations emerging from developments in information and communication technologies, particularly the digital transformation, in which artificial intelligence (AI) has played a central role. Within this context, several recent international and local studies have examined the interrelated variables of artificial intelligence, startups, and innovative ventures. The following section summarizes the main findings from this body of literature.

Over the past two decades, the world has witnessed an unprecedented acceleration in technological innovation, especially in the field **of artificial intelligence (AI),** leading to a set of complex economic and social paradoxes. In their study of the modern productivity paradox, **Brynjolfsson et al. (2017)** argue that we live in an *age of contradictions*, where AI-driven systems are now matching or surpassing human performance in numerous domains, fueled by rapid technological progress, while measured productivity growth has fallen by half over the past decade and real incomes have remained stagnant for the majority of Americans since the late 1990s. The authors propose four main explanations for this contradiction: *false hopes*, *mismeasurement*, *redistribution*, and *implementation lags*. They emphasize that implementation lags are likely the most influential factor, as the most advanced capabilities of AI-particularly those based on **machine learning-**have not yet been widely diffused. The full impact of AI, they contend, depends on the development and integration of complementary innovations within new organizational and human environments (Brynjolfsson et al., 2017).

In the same vein, the **disruptive potential of AI technologies** is reshaping entrepreneurship and generating new opportunities for innovative ventures. The impact of AI on entrepreneurial activity is also evident in the rapidly growing volume of research, which, however, has become increasingly fragmented. To address this fragmentation, **Uriarte et al. (2025)** conducted a hybrid literature review titled "*Artificial Intelligence Technologies and Entrepreneurship: A Hybrid Literature Review",* examining 345 peer-reviewed journal articles on the application of AI technologies in entrepreneurial practice. Their study identifies the key contributions, conceptual, social, and intellectual structures, and main research themes in the field. Despite the rising scholarly interest, they find that most existing research remains superficial. Accordingly, they propose future research directions grounded in two analytical frameworks: the **antecedents–decisions–outcomes (ADO)** model and the **theories–contexts–methods (TCM)** framework (Uriarte et al., 2025).

Given the widespread adoption of AI among large corporations and its impact on performance, **Arachie et al. (2025)** investigated the effects of AI adoption-focusing on **generative AI** and **chatbots-**on customer relationship management (CRM) capabilities among small and medium enterprises (SMEs) in southeastern Nigeria. Their regression analysis revealed that the use of generative AI and chatbots significantly and positively influenced CRM capabilities, jointly explaining 98.1% of the variance. Although adoption rates remain low, the study concludes that AI technologies possess substantial potential to enhance CRM effectiveness in SMEs. The authors

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recommend increasing capacity-building initiatives, improving access to AI tools, and integrating AI support into SME development policies to bridge the gap between awareness and implementation. Such measures would enable SMEs to harness AI for sustainable competitiveness and customer satisfaction in the digital economy (Arachie et al., 2025).

Recent years have also seen growing academic interest in **AI research within Algeria**, both in terms of the country's readiness to adopt this technology and its practical applications across economic, educational, and accounting domains. In this regard, **Meliani et al. (2024)** conducted a study titled "*Artificial Intelligence and the Challenge of Readiness in Algeria"*, aiming to assess Algeria's readiness for AI adoption compared to countries across various regions, including America, Europe, Asia, Africa, and the Arab world. Using indicators from **Oxford Insights' Government AI Readiness Index (2022),** the authors found that Algeria has not yet achieved an adequate level of readiness. Their findings highlight a **significant digital divide** between Algeria and developed nations, underscoring the urgent need for coordinated efforts to narrow this gap and build a foundation for future AI development (Meliani et al., 2024).

In another Algerian study, **Benhaoues and Belaid (2025)** examined *The Reality of Using Artificial Intelligence in the Accounting Field in Algeria*, seeking to evaluate the use and impact of AI technologies on accounting practices. Based on data collected from structured questionnaires distributed to fifty professionals, the study found that AI provides essential support for accountants and external auditors by allowing them to move away from repetitive tasks and focus on higher-level analytical functions. Moreover, AI contributes **to professional development** by facilitating the acquisition of new skills and expertise that enhance task efficiency. Compared to traditional methodologies, AI-powered accounting and auditing systems also improve risk detection by processing and analyzing large volumes of complex financial data (Benhaoues & Belaid, 2025).

At the level of **entrepreneurship and university innovation, Toubi et al. (2024**) explored the topic "*The Role of Startup Incubators in Algerian Universities: Leveraging Digital Marketing for Success".* Their study investigates the critical role of university-based startup incubators in Algeria, focusing on how digital marketing strategies are employed to support the growth and success of emerging ventures. The paper also discusses the challenges and opportunities facing these incubators and provides insights into how digital marketing can be used effectively to overcome barriers and strengthen the Algerian startup ecosystem (Toubi, Ferdi, & Kaabi, 2024).

Taken together, the reviewed international studies indicate that AI represents a **dual driving force**: on one hand, a powerful lever for productivity and innovation; on the other, a source of structural and organizational challenges that may hinder its short-term impact—especially in developing economies, which require adaptive institutional environments to fully absorb technological innovation. In contrast, local Algerian studies reveal that AI remains in its **early stages of adoption and application**, with notable disparities across sectors. While some findings point to weak infrastructure and limited readiness, others highlight promising opportunities for AI to enhance **professional performance** in accounting and to strengthen the role of **universities as incubators of innovation and digital entrepreneurship** .

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Research Methodology:

This research adopts a qualitative approach to study the role of artificial intelligence in supporting the growth of startups in Algeria. The current research relies on secondary data sources, including government reports, international reports, startups statistics, and academic studies while the

Data were analyzed using a thematic framework structured around three(03) principal sections: Artificial Intelligence: Concepts and Applications, The startup ecosystem in Algeria , and finally AI as a driver of startup development in Algeria. This classification facilitates both comparative analysis with the current international situation and contextualization within Algeria's policy and economic ecosystem.

1- Artificial Intelligence: Concepts and Applications

In this section, artificial intelligence is addressed as one of the most prominent digital technologies that has brought about a radical transformation across various sectors, especially in the business world. The aim of this section is to provide a comprehensive overview of the concept of artificial intelligence, explain its main subfields, and examine how organizations adopt it to achieve competitive advantages and improve operational efficiency. This chapter will be divided into three main parts: beginning with the definition of artificial intelligence, then discussing its key subfields, and finally analyzing the current state of its adoption in the modern business environment.

1-1-Definition of AI

Artificial Intelligence has been described in numerous ways by both international organizations and academic researchers. As no single definition has gained universal acceptance, we will consider some of the most authoritative ones. Accordind to the organization for economic co-operation and development (OECD):

"An AI system is a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptiveness after deployment. " (OECD, 2024, p.6).

Similarly the European Union's AI defined AI as:

"a machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments." (Regulation (EU) 2024/1689, 2024)

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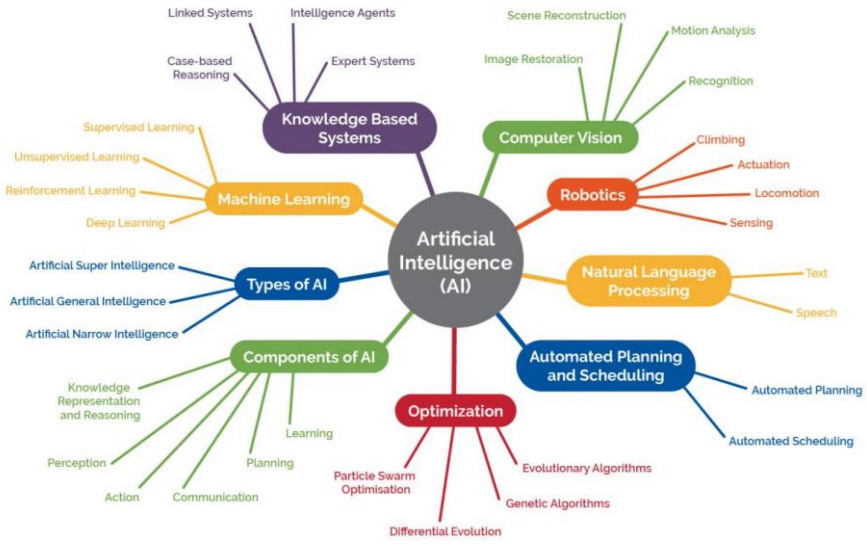
Based on the definitions above, ***Artificial Intelligence may be defined as a machine-driven system that analyzes data to produce useful outputs—whether in the form of predictions, content, or decisions—and that can operate with a certain degree of autonomy and continuous improvement.***

1-2 Major Subfields of Artificial Intelligence

Within the broad field of AI, there are several major subfields that focus on specific aspects of intelligent systems. These subfields encompass a wide range of techniques, methodologies, and applications, each with its own unique set of challenges and opportunities.

Figure (01): Components, types and subfields of AI



Source: Cardona, M. A., et al. (2023). *Artificial intelligence and the future of teaching and learning*. Office of Educational Technology, U.S. Department of Education.

The Figure above presents the main categories and components of Artificial Intelligence. AI encompasses various subfields such as Machine Learning, Computer Vision, Robotics, Natural Language Processing (NLP), Optimization techniques, Knowledge-Based Systems, and Automated Planning. Each of these domains contributes differently to the development of innovative business solutions. For instance, Machine Learning can help startups analyze customer data, NLP enables automated customer service, and Computer Vision can enhance quality control in manufacturing startups.

Understanding these AI categories is essential for identifying their potential applications in the Algerian entrepreneurial ecosystem.

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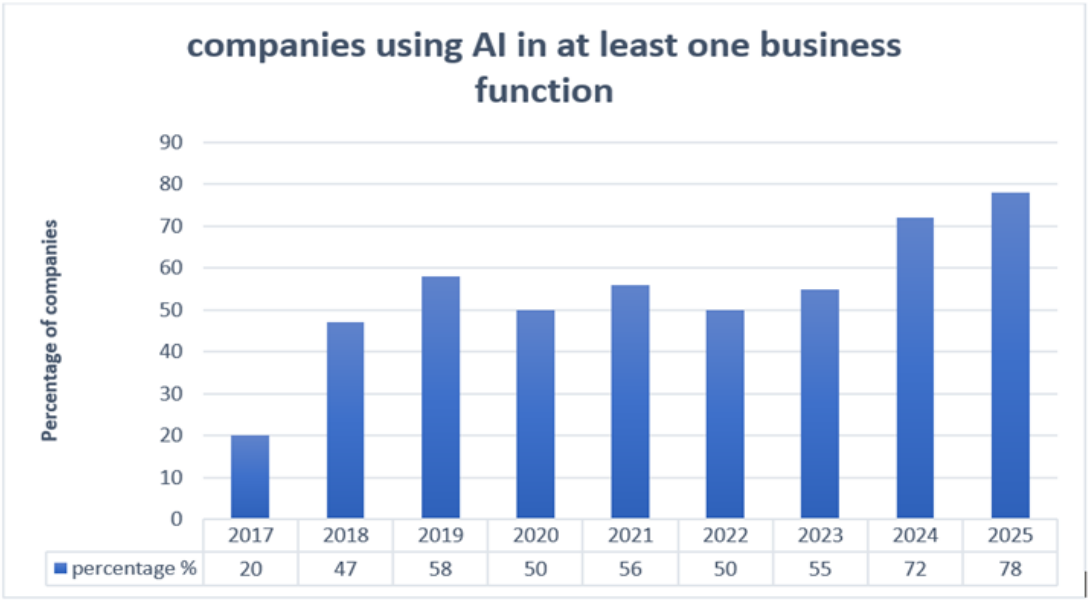
1-3 Adoption of Artificial intelligence in Business

Over the past decade, companies worldwide have increasingly adopted AI as a key strategy to enhance efficiency and remain competitive. Moreover, the integration of AI into business functions reflects not only the technological progress but also the growing recognition of its strategic value. The tow figures below highlight the global trends in AI adoption and the most common areas where companies are applying AI to support their growth.

Figure (02) :Companies using AI from 2017 UNTIL 2025.



Source: Cardillo, A. (n.d.). *How many companies use AI. Exploding Topics.* Retrieved October 21, 2025, from https://explodingtopics.com/blog/companies-using-ai#the-future-of-ai-use-in-business

The chart above illustrates the percentage of companies adopting Artificial Intelligence (AI) in at least one business function from 2017 until 2025.

AI adoption has grown significantly over the years, rising from just 20% in 2017 to a projected 78% in 2025. After a consistent increase between 2017 and 2019, adoption slightly declined in 2020 (50%), likely due to global disruptions caused by the COVID-19 pandemic. However, usage quickly recovered in subsequent years.

The most notable growth occurred between 2023 and 2024, where adoption jumped from 55% to 72%, reflecting a global acceleration in digital transformation and confidence in AI technologies. By 2025, AI is expected to become mainstream, with nearly 8 out of 10 companies integrating it into their operations.

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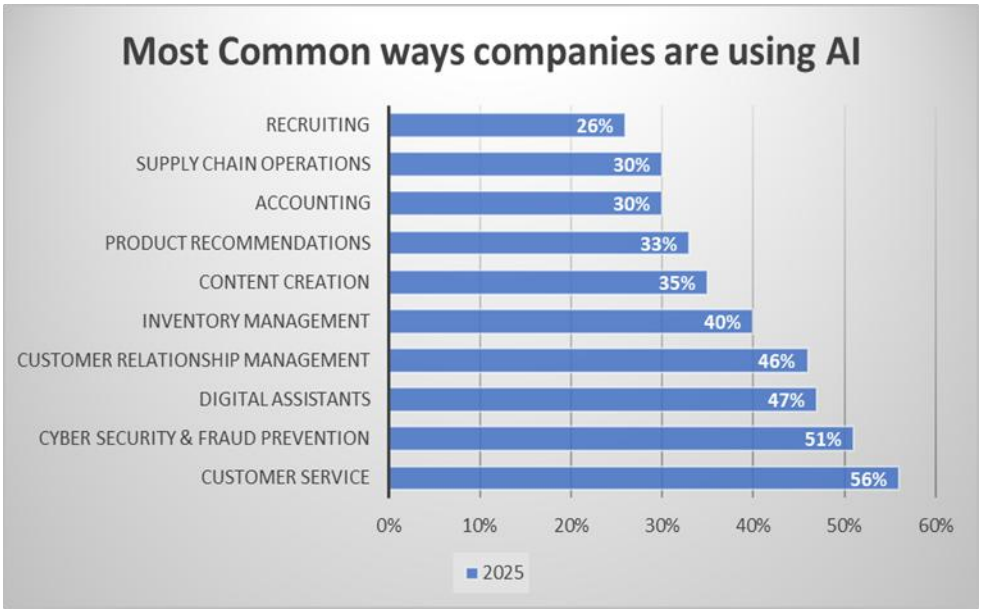
Figure (03):Most common ways companies are using AI



Source: Cardillo, A. (n.d.). *How many companies use AI. Exploding Topics.* Retrieved October 21, 2025, from https://explodingtopics.com/blog/companies-using-ai#the-future-of-ai-use-in-business

The previous figure illustrates the top areas where companies are implementing Artificial Intelligence (AI) in 2025, based on the percentage of companies using AI in each function. The results show that companies give priority to customer-related and security-oriented applications. Customer service (56%) leads as the most common use, reflecting firms' focus on improving responsiveness and client satisfaction. Similarly, cybersecurity and fraud prevention (51%) represent a key area of investment, emphasizing the role of AI in protecting organizations from increasingly sophisticated digital threats.

Other important applications include digital assistants (47%) and customer relationship management systems (46%), which highlight the central role of AI in enhancing customer engagement and managing interactions at scale. From an operational perspective, inventory management (40%) and content creation (35%) show that companies also rely on AI to optimize resource allocation and support digital production processes. However, domains such as product recommendations (33%), accounting (30%), and supply chain operations (30%) demonstrate more moderate levels of adoption. Finally, recruitment (26%) remains the least developed field, indicating that human resource management is still less impacted by AI compared to customer-facing and risk-management activities.

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2-The startup ecosystem in Algeria

A startup is often defined by various organisations and resarchers worldwide as a new company with high growth potential, owing to its scalable business model and reliance on new technologies. This represents the common global definition of a startup. However, in the Algerian context, the government has introduced specific criteria to determine whether a newly established company can be officially recognized as a startup.

2-1 Definition of startup in Algerian context

According to Article 11 of Executive Decree No. 20-254, which includes 'the establishment of the National Committee for the Granting of Labels for a Startup, Innovative Project, and Business Incubator', supplemented by Executive Decree No. 21-442: A startup is considered any enterprise that is subject to Algerian law and meets the following six criteria listed in the table below:

Table (01): Criteria for Classifying a Startup in Algeria.

Criteria	Conditions
Age	Must not exceed 8 years from the date of being granted the Startup label
Innovation	Must be present in its products and/or services and/or business model and/or organisational model.
Capital ownership	At least 50% of capital must be held by natural persons, accredited investment funds, or entities already bearing the Startup label
Size	Number of employees must not exceed 250
Turnover	Must not exceed the limit set by the National Committee for the Granting of Labels for a Startup, Innovative Project, and Business Incubator.
Growth potential	Must have significant potential for development and expansion

Source: *Official Gazette*, Issue No. 55, dated September 21, 2020. *Executive Decree No. 20-254 and Executive Decree No. 21-422 amending and supplementing*, p. 10.

Table (01) clearly highlights the regulatory framework adopted by Algeria to classify startups, a framework based on precise criteria that combine modernity with flexibility. These criteria reflect a strategic orientation towards supporting innovation and encouraging entrepreneurial initiatives in their early stages, with a focus on the ability of companies to grow and expand. The conditions also reveal the state's commitment to creating a stimulating business environment that attracts talent and finances promising projects, thereby contributing to the enhancement of the digital economy and sustainable development. In summary, it appears that Algeria is adopting a comprehensive and systematic approach to developing the startup ecosystem and making it a key driver of the national economy.

2-2 Legal and financial framework

The Algerian legislator has implemented a series of measures under laws that pertain to start-up enterprises, with the objective of fostering innovation, encouraging entrepreneurship, and supporting the integration of new businesses into the national economy. These legal frameworks

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aim to create a favorable environment by offering fiscal incentives, simplified administrative procedures, and access to dedicated financing mechanisms.

- **Algerian startup funds:** The Algerian Startup Fund (ASF) is a venture capital company, created in October 2020. Its mission is to develop the entrepreneurial and innovation ecosystem in Algeria by providing financing services that meet the needs of startups." (Algerian Startup Fund, 2025)
- **Designation Labels for Startups and Innovative Projects** :According to the Algerian Ministry of startup ,We can find two(02) types of labels:
  - The Startup Label is an institutional document, established by Executive Decree No. 20-254 of September 15, 2020 (supplemented by Decree No. 21-442), which serves as a prerequisite for accessing all the facilities and incentives provided by the State to startups. It may only be granted once the company has been legally established and fulfills a set of prescribed criteria. Furthermore , the label startup granted for a period of four (4) years and may be renewed once, provided that the company continues to comply with the criteria established therein.
  - The 'Innovative Project' label is addressed to project holders who have not yet established their company. Similar to the 'Startup' label, it entitles them to access the advantages provided by the State (Startup Algeria, 2025).
- **Tax and Customs Incentives:** the government has granted every institution labelled the "startup", "innovative project" or "incubator" several privileges, with the aim of giving them favorable conditions to accelerate the fulfill of their innovative projects, according to the Finance Law of 2021 under Articles 81 and 87, which exempts these institutions from paying the professional activity levy, as well as exempting them from paying tax on corporate profits or on general income (Medjahdi, 2025, p. 366).

2-3 Recent statistics on Algerian startups and innovation.

The Algerian startup ecosystem has experienced a rapid growth in recent years, supported by government initiatives through the creation of various structures within universities, such as incubators, entrepreneuship centers, startup accelatorswhich have fostered increasing investment in innovation.

Table (02): Startup supports in Algeria (2025)

Support structure	Number (2025)
University business incubators	**124**
Entrepreneushipdevelopment centers (CDE)	**117**
Technology and innovation support center (CATI)	**93**
Spin-off	**310**
Startup accelerator	**47**

Source: Mire.A. (n.d.), National Coordinating Committee for Innovation and University Business Incubators.Retrieved from https://www.facebook.com/INCU1982/videos/-/512184531907882

Recent statistics for 2025 illustrate the significant expansion of Algeria's startup support ecosystem. The country now hosts 124 university business incubators, serving as crucial platforms to help young entrepreneurs transform academic knowledge into viable business ventures.

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Alongside them, 117 entrepreneurship development centers (CDEs) foster entrepreneurial culture and guide project initiation, while 93 technology and innovation support centers (CATIs) strengthen research activities, technological development, and intellectual property protection.

This infrastructure is complemented by 310 spin-offs, highlighting the successful commercialization of research outcomes and the effective transfer of knowledge from universities to the market. Moreover, 47 startup accelerators play a vital role in boosting competitiveness by offering mentoring, networking opportunities, and access to funding. Together, these mechanisms represent a comprehensive support framework that underpins Algeria's ambition to promote innovation and sustain the growth of startups.

3- AI as a driver of startup development in Algeria

In recent years, artificial intelligence (AI) has become a central element in the development of the startup ecosystem in Algeria, serving as a powerful tool to enhance innovation, improve operational efficiency, and open new markets. This section aims to explore the role of AI in supporting the growth of startups by analyzing the national investment strategy in this field, as well as examining the challenges and opportunities associated with its adoption.

3-1 Algeria's AI Investment Strategy and its impact on startup

Algeria has recognized the strategic importance of artificial intelligence as a key element in promoting innovation and economic growth, particularly within the startup ecosystem. To this end, the country has developed a comprehensive AI investment strategy aimed not only at providing financial support to startups but also at addressing the broader needs of the industry.

Accordingly, Algeria has announced the launch of an 11 million Dollars **Artificial Intelligence (AI) investment fund**, spearheaded by the state-owned telecommunications company "Algérie Télécom". This fund is designed to accelerate the growth of AI startups while promoting advancements in cyber security and robotics innovation.

This initiative aligns with Algeria's national digital transformation agenda, which positions AI as a strategic pillar of economic growth. The government has set an ambitious target for AI to contribute 7% of GDP by 2027, underscoring its commitment to technological innovation. Within this framework, Algeria aims to foster 20,000 startups, expand digital infrastructure, and establish AI-focused research and academic institutions.

The AI fund is not limited to financial support for startups; it also addresses broader industry needs. In addition to financing AI applications across sectors, the fund will promote initiatives in cyber security and robotics, ensuring that Algerian enterprises remain competitive in the global technological landscape. Complementary investments are also being directed toward universities, research centers, and nationwide business incubators in order to cultivate local talent and create a sustainable innovation ecosystem.

In addition to funding, Algeria has set up the **National AI Council**, a scientific advisory body established on June 26, 2023, by the Ministry of Higher Education and Scientific Research, and the Ministry of Knowledge Economy, Start-ups, and Micro-Enterprises (AI Council, n.d.)

The national AI Council was created with the mission of supporting the Algeria's digital transformation and innovation ecosystem. Its main objectives are:

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- To provide recommendations for a cross-sectoral national AI strategy.
- To offer policy advice for the development, regulation, and ethical use of AI technologies.
- To foster collaboration between universities, startups, and enterprises in the field of AI.

To ensure the success of this AI-driven vision, Algeria has also introduced training programs under the banner of **"Scale Centers."** These centers will equip young professionals with specialized skills in AI, cybersecurity, and cloud computing, essential for driving technological progress. Additionally, the government is prioritizing the establishment of dedicated AI universities, research hubs, and startup incubators to further strengthen the innovation ecosystem (Startup Researcher. n.d.).

3-2-AI Integration in Algerian startup: Barriers to Adoption and Potential Benefits for Startups

In recent years, artificial intelligence has emerged as a crucial tool for supporting startups in Algeria, both in terms of improving operational efficiency and enhancing innovation and market expansion. However, the adoption of this technology in startups faces several challenges that hinder its full implementation, while at the same time offering significant benefits for companies that manage to integrate it effectively. This section aims to explore **the barriers to adopting AI** in Algerian startups, as well as **the potential benefits of its use** in enhancing growth and competitiveness.

a. Barriers to adopt AI in Algerian startup

Despite Algeria's significant efforts to keep pace with digital transformation, the adoption of AI faces numerous challenges. These challenges can be summarized as follows:

- The level of development of IT infrastructure: the most critical indicator of AI readiness is the availability of IT infrastructure, including internet bandwidth, data centers, and other technological foundations required to support AI applications. In this context, Algeria still faces a significant gap, as current AI applications remain limited to companies as well as business startups (Sari, 2025, p. 113).
- The lack of clarity and the absence of a comprehensive legal framework regulating the AI sector in Algeria constitute one of the most prominent legal challenges facing the development and use of AI particularly with regard to the legal rules governing the deployment and use of these technologies, moreover there is a considerable difficulty in establishing legal ability in cases where damages result from the malfunction of AI systems (Mezouar, 2025, p. 640).
- The increasing use of digital technologies combined with the lack of advanced cybersecurity infrastructure and clear national standards for data privacy has exposed Algeria to rising cyber threats and therefore limits the integration of AI systems in such sensitive sectors particularly within startups ecosystem.
- The costs associated with AI adoption go beyond the initial investment in technology. Businesses need to budget for employee training programs, hiring skilled data scientists and AI specialists, ongoing maintenance, and potential system upgrades. This financial barrier often leads businesses to delay or limit their AI adoption efforts.For Startups, in particular, these costs can be a major obstacle, leading to tough decisions about the scope of AI

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initiatives. Balancing the benefits of AI against the associated costs requires careful financial planning and a clear understanding of the long-term ROI (Return on Investment) that AI can bring to the organization (Sachdeva, 2023)

b. Benefits of using AI in Algerian startup

Artificial intelligence can enhance and support the competitiveness and scalability of Algerian startup through several mechanisms:

- Enable startups to transition from early stage maturity toward more sophisticated systems that enhance efficiency, innovation and long term performance (Mekimah et al., 2025)
- Provides startups with advanced tools to enhance quality management by improving decision making processes and creating a long term competitive advantages, its ability to rapidly process large volumes of data identify hidden patterns, and recommend optimal actions allows startups to respond quickly to market changes and improve overall performance (Tran et al., 2024).
- The use of AI in the field of startup products can enhance idea generation, optimize design, and streamline prototyping, by utilizing algorithms that analyze user interactions and identify potential areas for product improvement(Tran et al., 2024).
- AI facilitates scalability , which is crucial for startups to expand their market share and generate significant revenue streams this relies on the capacity of AI systems that can manage larger volumes of data, without a corresponding increase in costs, and without the need for additional human resources (Adekunle**,**2024).

Conclusion

Algeria has established a diversified network of institutions that aim to strengthen innovation capacity and encourage the growth of startups. However, the effectiveness of these structures depends largely on how well they integrate with national strategies, access to financing, and the adoption of advanced technologies such as artificial intelligence.

In 2025, artificial intelligence is no longer emerging, it is foundational. AI in our day powers 6.2% of all global startups and accounts for nearly 9.2% of unicorns, underscoring its central role in shaping the innovation economy. Rather than chasing sci-fi fantasies, AI startups are solving real problems, boosting productivity, accelerating innovation, and transforming industries at scale (StartupBlink, 2025).

The Algerian authorities have taken several steps to enhance the startup ecosystem through the introduction of multiple support and measures including startup funds, labeling system, fiscal incentives and university incubators. In addition, recent initiatives, such as the creation of national AI council and the launch of AI investment fund, reflect the strong will of the Algerian government to go forward to digital transformation in many fields, mostly on the development of business area. However; the real success of these measures depends on their effective implementation, the reinforcement of digital infrastructure, and the development of specialized training programs to cultivate local expertise.

Despite the weak level of IT infrastructure development in Algeria, the government has nevertheless established a substantial information infrastructure base capable of supporting future

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AI initiatives, in parallel, significant efforts have been made to empower local talent and skills through the integration of AI programs in universities across the country, these initiatives aim to support innovation and entrepreneurship, fostering the creation of startup that can contribute to the national economy.

Recommendation

In conclusion, this study presents the following recommendations to promote the adoption of artificial intelligence and enhance the growth and competitiveness of startups in Algeria:

- Ensuring robust data protection mechanisms and cyber resilience is crucial for ensuring the safe and sustainable deployment of AI systems in Algeria.
- Invest in training programs and workshops focused on AI technologies for employees in Algerian startups.
- Promote collaboration between universities, research centers, and startups to facilitate knowledge transfer and innovation in AI.
- Establish government-backed incentives and funding programs to support startups in adopting AI solutions.
- Develop clear regulatory frameworks and ethical guidelines for the responsible use of AI technologies.
- Encourage the creation of AI-focused incubators and accelerators to provide technical, financial, and mentorship support to startups.
- Facilitate access to cloud computing infrastructure and AI development platforms to lower technical barriers for startups.
- Raise awareness among entrepreneurs about the strategic advantages of AI adoption for competitiveness and market growth.

References

Brynjolfsson, E., Rock, D., & Syverson, C. (2017). *Artificial intelligence and the modern productivity paradox: A clash of expectations and statistics* (NBER Working Paper No. 24001). National Bureau of Economic Research. https://doi.org/10.3386/w24001

Uriarte, S., Baier-Fuentes, H., Espinoza-Benavides, J., & Inzunza-Mendoza, W. (2025). *Artificial intelligence technologies and entrepreneurship: A hybrid literature review.* Review of Managerial Science. https://doi.org/10.1007/s11846-025-00839-4

Arachie, A. E., Nwosu, K. C., Ugwuanyi, S. C., & Ibrahim, A. M. (2025). *Artificial Intelligence Adoption and Business Performance: Evidence from Small and Medium Enterprises in Emerging Markets. International Journal of Public Administration and Management Research, 11*(2), 69–86. Retrieved from file:///C:/Users/HP/Downloads/1196-ArticleText-2153-1-10-20250513.pdf

Meliani, M., Billel, M., Omar, B., & Imane, M. (2024). Artificial intelligence and the challenge of readiness in Algeria.International Journal of Economic Perspectives,18(11), 2663–2679. Retrieved from https://ijeponline.org/index.php/journal/article/view/746

Benhaoues, K., & Belaid, K. (2025). *The reality of using artificial intelligence in the accounting field in Algeria. (Z. Cekerevac, Ed.)MEST Journal, 13*(2), 17–30. Retrieved from https://www.meste.org/ojs/index.php/mest/article/view/1477

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 35 Issue 2, 2025, Pages: 487-501

Toubi, A., Ferdi, A., & Kaabi, R. (2024). *The Role of Startup Incubators in Algerian Universities: Leveraging Digital Marketing for Success. Remittances Review, 9*(2), 1598-1608. Retrieved from https://remittancesreview.com/menu-script/index.php/remittances/article/download/1630/1039/3235

OECD. (2024, March). *Explanatory memorandum on the updated OECD definition of an AI system* (OECD AI Papers No. 8, p. 6)

European Union. (2024). *Regulation (EU) 2024/1689 of the European Parliament and of the Council of 12 July 2024*. *Official Journal of the European Union*, L, 2024/1689.

Cardona, M. A., et al. (2023). *Artificial intelligence and the future of teaching and learning*. Office of Educational Technology, U.S. Department of Education.

Cardillo, A. (n.d.). *How many companies use AI. Exploding Topics.* Retrieved October 21, 2025, from https://explodingtopics.com/blog/companies-using-ai#the-future-of-ai-use-in-business

Official Gazette. (2020, September 21). *Executive Decree No. 20-254 and Executive Decree No. 21-422 amending and supplementing* (Issue No. 55, p. 10)

Algerian Startup Fund. (2025, August 28). *Official website*. Retrieved August 28, 2025, at 17:35, from https://asf.dz

Startup Algeria. (2025). Retrieved August 28, 2025, from https://startup.dz
Medjahdi, K. (2025). *The startups concept and the financing mechanisms in Algerian legislations*. *The Circle of Legal and Political Researches and Studies*, 9(2), 366.

Mire.A. (n.d.), National Coordinating Committee for Innovation and University Business Incubators.Retrieved from https://www.facebook.com/INCU1982/videos/-/512184531907882

AI Council. (n.d.). *Official website.* Retrieved October 21, 2025, from https://aicouncil.dz

Startup Researcher. (n.d.). *Official website.* Retrieved August 28, 2025, from https://www.startupresearcher.com/

Sari, M. F. (2025). *Artificial intelligence in Algeria: A diagnostic assessment*. *Journal of Law, Society and Authority*, 113

Mezouar, F. (2025). *The extent to which the Algerian legislation keeps pace with the acceleration of the use of artificial intelligence*. *The International Tax Journal*, 640

Sachdeva, N. (2023, October 28). *Six major barriers to AI adoption and their practical solutions*. Retrieved from http://insights.daffodilsw.com

Mekimah, S., et al. (2025, February). *From code to quality: How AI is transforming quality management in Algerian startups*. *International Journal of Research and Scientific Innovative Studies*, p. 1775

Adekunle, O. K. (2024). *Artificial intelligence adoption and startup success rates. International Journal of Research and Innovation in Social Science*, November 2024, p. 3035

StartupBlink. (2025, June 24). *Top AI startups in 2025.* Retrieved from http://www.startupblink.com/blog/top-ai-startup