

Digital Entrepreneurship in Algeria: Reality and Challenges

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Abstract

Digital entrepreneurship is a strategic imperative for economies that depend on hydrocarbons, such as Algeria. It provides the opportunity to shift from a rentier economic model to a more resilient, knowledge-based one. The objective of this study is to analyze the current reality and systemic challenges that hinder the growth of digital entrepreneurship in Algeria. Accordingly, a dual research approach was adopted, relying on a descriptive and analytical methodology to comprehensively explore the topic. According to the study, Algeria has a lot of potential, but it's crucial to jointly address the challenges to unlock the full potential of digital entrepreneurship as a driver of economic diversification and prosperity in Algeria.

Keywords: Digital entrepreneurship; Algeria; digital ecosystem; reality; challenges.

JEL classification codes : L26, M13, O33.



ريادة الأعمال الرقمية في الجزائر: الواقع والتحديات

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المخلص:

تُعد ريادة الأعمال الرقمية ضرورةً استراتيجيةً للاقتصاديات المعتمدة على المحروقات، مثل الجزائر. فهي تُتيح الفرصةً للتحويل من نموذج اقتصادي ريعي إلى نموذج اقتصادي أكثر مرونةً وقائمًا على المعرفة. تهدف هذه الدراسة إلى تحليل الواقع الفعلي والتحديات النظامية التي تُعيق نمو ريادة الأعمال الرقمية في الجزائر. وبناءً على ذلك، تم اعتماد منهج بحثي مزدوج، يعتمد على منهجية وصفية وتحليلية لاستكشاف الموضوع بشكلٍ شامل. ووفقًا للدراسة، فإن الجزائر تتمتع بإمكانياتٍ كبيرة في المجال الرقمي، ولكن من الضروري العمل بشكلٍ مشتركٍ لمواجهة التحديات الرقمية من أجل استغلال ريادة الأعمال الرقمية كمحركٍ للتنوع الاقتصادي والازدهار في الجزائر.

الكلمات المفتاحية: ريادة الأعمال الرقمية، الجزائر، النظام البيئي الرقمي، الواقع، التحديات.

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1. Introduction

Today, the field of digital entrepreneurship has become increasingly important and is a topical issue in both practice and research. (Tobias, Lucas Kleine, Katharina, & Strauss, 2021)

In this context, previous literature has discussed multiple terms, such as e-entrepreneurship, internet entrepreneurship, and techno-entrepreneurship, which have often been used as synonyms for digital entrepreneurship.

Digital entrepreneurship is the process of creating and managing new ventures and transforming existing businesses using digital technologies. Innovative technologies, such as social media, mobile apps, e-commerce platforms, cloud computing, AI, and data analytics, are utilized by digital entrepreneurs who design and deliver their products and services online using the online marketplace. (Saumya, 2025, p. 1)

While digital transformation has a global momentum, its trajectory within specific national contexts varies greatly, shaped by unique institutional, economic, and social factors. Algeria is actively pursuing a top-down, state-led strategy to develop a digital entrepreneurship ecosystem, through a series of ambitious government initiatives and policy reforms, the country aims to catalyze innovation and shift its economic foundation. In spite of these concerted efforts and a demonstrable desire for digital adoption among its young population, the ecosystem continues to face persistent and formidable structural and systemic challenges. This paper aims to bridge the gap between official policy intentions and the reality on the ground, by critically analyzing the current state of the ecosystem.

Research problem

Based on the above, the research problem can be formulated in the following central question:

What is the on-the-ground reality of digital entrepreneurship in Algeria within the national strategy of digital transformation, and what are the primary challenges that hinder its development?

Research Questions

To address the identified research problem, this study seeks to answer the following research questions:

Question 1: In what ways has the creation of a foundational digital framework by the Algerian state facilitated adoption while simultaneously encountering barriers to full-scale digital evolution?

Question 2: What are the primary systemic challenges—including regulatory, infrastructural, and skill-based factors—that hinder the scalability and sustainable growth of digital ventures in Algeria?

Research Significance

This study is significant because it bridges the gap between the ambitious policy vision for digital entrepreneurship in Algeria and the on-the-ground reality faced by entrepreneurs. By examining both the progress made and the persistent systemic challenges, this research provides a comprehensive and critical analysis of the current ecosystem. It highlights how, despite proactive government initiatives, a complex web of obstacles continues to impede growth. The research is crucial for stakeholders, including policymakers, investors, and entrepreneurs, as it offers a data-driven understanding of these barriers.

Research Objectives

The main objectives of this study are to:

- Provide a clear conceptual definition of digital entrepreneurship and key related concepts to build a foundational framework for the analysis.
- Analyse a set of indicators and metrics to accurately describe the current state of digital transformation and the digital ecosystem in Algeria.
- Identify the most significant challenges and obstacles that digital businesses face in Algeria.

Research Methodology

This research is based on a synthesis of existing literature and datasets regarding digital entrepreneurship in Algeria. It adopts a multi-faceted approach, combining descriptive and analytical methodologies. The study employs a descriptive methodology to establish a comprehensive conceptual and theoretical framework of digital entrepreneurship. It then utilizes an analytical descriptive approach to analyse the data collected about digital entrepreneurship and digital ecosystem within the Algerian context.

Data collection was conducted across primary academic databases, including Google Scholar, Science Direct, and the Algerian Scientific Journal Platform (ASJP), using keywords such as digital entrepreneurship, Algerian startup ecosystem, and digital Transformation. The study focuses on peer-reviewed articles, official government reports, and economic reports published within a ten-year window (2015–2025). Sources were included only if they provided empirical or theoretical data specifically tied to the Algerian digital context.

A thematic analysis was employed to extract core indicators. These indicators were cross-validated by comparing academic findings with official national economic data. The

resulting data was processed through a descriptive-analytical lens to map the conceptual framework of digital entrepreneurship and evaluate the current maturity level of the Algerian digital ecosystem.

2. Conceptual foundations of digital entrepreneurship

2.1 Digital entrepreneurship definition

Digital entrepreneurship became a phenomenon that emerged with technological advances that started in the late 1990s and early 2000s. The digital world offers a vast universe of new resources for entrepreneurs to take advantage of, from exponentially growing collections of open data, content, code, and services to the online contributions of users and communities around the world. (Jonathan P, 2019, p. 3). Also, digitalization has had a significant impact on the innovation process and, consequently, on entrepreneurship. (Miguel-Ángel, María-Soledad, & María-Teresa, 2023, p. 4)

Digital entrepreneurship highlights changes in entrepreneurial education, as well in theory and practice. It has been changing social norms and behaviours, creating opportunities for people to increasingly customize their choices to meet tastes and desires in a customized way. (Teodoro Malta, 2024, p. 870). Moreover, it fundamentally transforms nearly every facet of launching, scaling, and operating new businesses. Entrepreneurs gain innovative avenues for customer acquisition, product and service design, revenue generation, and cost reduction. Crucially, it also unlocks new opportunities for partnership, unique sources of competitive advantage, and novel avenues for both opportunity and risk. (Luca & Carmine, 2023).

This field covers a wide range of digital tools and strategies, including but not limited to: E-commerce, social media and digital marketing,

mobile applications, cloud computing, blockchain and artificial intelligence (AI) and machine learning. (Jaka, Krishna, Muhammad Fikra, Tribowo Rachamat, & Rezzi Nanada, 2023, pp. 1341-1342)

Digital entrepreneurship can be divided into three types namely: (Anggraeni, 2019, p. 158)

a. Mild digital entrepreneurship: incorporating digital activities to enhance or support existing, more conventional business operations. It's about blending the digital economy with traditional practices.

b. Moderate digital entrepreneurship: is defined by a strong emphasis on digital products, delivery, or other digital elements in the business. The digital infrastructure is a prerequisite for its existence.

c. Extreme digital entrepreneurship: implies that every aspect of the business is digital, including production, goods or services, advertising, distribution, and customers.

2.2 The differentiating characteristics

The essence of digital entrepreneurship is to integrate digital methods and digital business operations within the realm of traditional entrepreneurship while offering digital goods and services. The major differences between digital and traditional entrepreneurship are the following:

2.2.1 Digital products

Digital products offer significant advantages to entrepreneurs, particularly in areas like manufacturing, storage, and shipping, because they can be easily modified and innovated without interrupting current production or marketing efforts. However, collecting comprehensive feedback is essential before the launch of new digital creations. (Clyde Erikur, Yu-Ting Caisy, Neil, Victor, & Richard, 2006, p. 12)

2.2.2 Digital services

In the digital world, the importance of services is constantly on the rise. The value proposition is crucial for customers, and they prioritize services that are both affordable and align with the price charged. Entrepreneurs can attract more customers and gain valuable insights into global demand by offering effective digital services. (Clyde Erikur, Yu-Ting Caisy, Neil, Victor, & Richard, 2006, p. 12)

2.2.3 Ease of distribution in the digital market

While the internet has revolutionized global commerce by enabling the rapid and affordable delivery of goods and services, this global reach simultaneously creates intense worldwide competition. Consequently, digital entrepreneurs must prioritize the development of highly effective strategies. (Rashmi & Hayri, 2020, p. 12)

2.2.4 Digital workplace

The internet offers entrepreneurs the opportunity to find capable employees and business partners from anywhere in the world. Also, entrepreneurs can hire talented individuals, optimize resource utilization, and foster cultural understanding by creating global virtual teams. However, virtual team managers often face significant challenges due to their lack of experience with this unique setup. (Rashmi & Hayri, 2020, p. 12)

2.2.5 Ease of entry

Setting up a digital business venture is a breeze. Less time is needed to create a website. For example, eBay and Amazon are companies that offer individuals the chance to start small business ventures in a short period of time. This process is difficult for partial digital ventures because some activities require more effort. (Vineela, 2018, p. 442)

2.2.6 Ease of manufacturing and storing

Two advantages of a business venture that deals with digital products are low manufacturing costs and less storage space, which are higher in traditional entrepreneurship. (Vineela, 2018, p. 442)

2.2.7 Digital Commitment

Cultivating commitment in new virtual companies may be more difficult than in new physical ones. (Anggraeni, 2019, p. 159)

3. The digital ecosystem in Algeria:

The “Digital Algeria 2030” vision is the core objective of Algeria's national digital transformation strategy. This inaugural national framework is crucial for organizing, overseeing, and guiding the transformation process. It adopts a participatory approach, involving all ministerial departments, experts, stakeholders, and economic operators in the digitalization field. Furthermore, the strategy provides a comprehensive roadmap focused on modernizing public administration, stimulating the digital economy, and establishing Algeria as a leading digital power in Africa.

This national strategy is based on five

strategic axes: the basic infrastructure, human resources, training, research and development, digital governance, digital economy and digital society. (DIGITALIZATION, 2024)

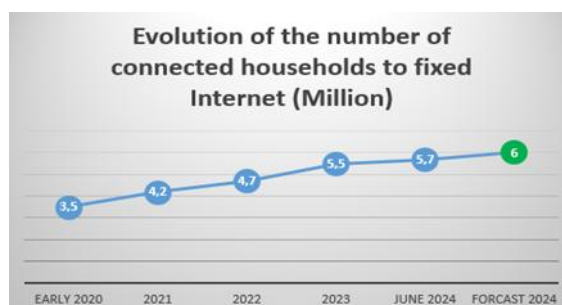
From this perspective, the digital economy in Algeria has been growing steadily, with significant improvements in connectivity infrastructure and e-commerce development. The Algerian government is focusing on improving its digital infrastructure, regulatory frameworks, and digital services to support this growth. Understanding these fundamental elements is crucial for assessing the environment in which digital entrepreneurship operates.

3.1 Digital infrastructure and connectivity:

As of early 2024, Algeria notably increased internet users and mobile connections. With a growing population reaching 46 million in 2024, 33.49 million internet users were recorded, translating to a penetration rate of 72.9% with a yearly growth of 3.9%. (Digital Economy, 2024)

Algeria has the 2nd largest fixed internet subscriber base in Africa. (Internet, 2025) The figure below presents the evolution of the number of connected households to fixed internet between 2020 and 2024.

Figure N° 1
Evolution of the number of connected households to fixed internet



Source: (Internet, 2025)

The figure shows that the number of fixed Internet subscribers has increased from 3.5 million households connected at the start of 2020

to 5.7 million households connected in the first semester of 2024.

Moreover, the total number of mobile internet

subscribers of the three operators in the Algerian telephony market (Mobilis-Djezzy-Ooredoo) reached 49.26 in 2024, which represents 94.35% of the total number of mobile subscribers in Algeria. (services, 2024)

Mobile connectivity is particularly robust, 95.2 % of the population owns a mobile phone, which is a total of 50.65 million mobile divided on three main operators. Mobilis with around 22.1 million subscribers; then, Djezzy with approximately 15.6 million subscribers; and finally, Ooredoo with 12.9 subscribers. (Digital Economy, 2024)

Within this context, mobile broadband coverage (3G and 4G) is widespread, covering more than 98% of the population, and mobile internet services are accessible to everyone. the number of 4G telephony data users exceeds 35.9 million users and the 3G telephony data users in nearly 2.1 million users. Social media engagement is

also high, reaching 24.85 million users in January 2024, representing 54.1% of the total population.

The development of the digital entrepreneurship is inseparable from the development of internet technology. The Algerian government has actively invested in enhancing its digital infrastructure, focusing on improving internet speeds and expanding access to digital tools across the population. This includes the implementation of 200 000 Km fiber optic network, by connecting 5.74 million households to landline internet, of which 1.24 million specifically connected via fiber-to-the-home (FTTH) technology by 2024. (DIGITALIZATION, 2024)

Table N° 1

Key Digital Connectivity Statistics in Algeria

Metric	Value (Year)
Internet Users (% of Pop.)	72.9% (2024)
Mobile Penetration Rate	94.35% (2024)
Mobile Subscribers (Millions)	50.65 (2024)
Mobile Broadband Coverage	>98% (2024)
FTTH Subscribers (Millions)	2 (2025)
Households with Fixed Line (Millions)	5.7 (2024)
Social Media Users (Millions)	24.85 (2024)

Source: Elaborated by the authors based on: (Internet, 2025)

3.2 Evolution of E-commerce in Algeria:

E-commerce in Algeria has begun to expand, especially since the issuance the law 05-18 of May10th, 2018 setting the general rules of e-commerce, its parties as well as its legal and regulatory aspects, like e-provider, e-consumer, e-communications, e-contract, e-payment method, and e-advertising. (Guide of E-commerce, 2024)

The e-commerce market in Algeria is witnessing moderate growth, fuelled by increasing internet

penetration, a burgeoning youth population, and a shift towards online shopping. (MPTTN, 2019, p. 4) These trends are enhancing consumer access to a diverse range of products and services.

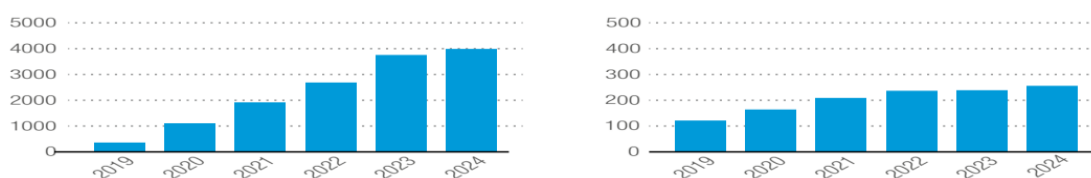
The first Algerian online marketplaces appeared in 2009. However, e-commerce began to take off in 2014 with the arrival of the pan-African Jumia. The website had approximately 1.5 million visitors and received between 15,000 and 20,000 orders per month in 2017, and increased to 1.7 million by early 2018. Ouedkniss, eCherily, and

Souk El Djazair, among many other online sales sites, are operational in Algeria. In this regard, the electronic payments in Algeria up to October 2019 are recorded nearly 454,204 online payment transactions. (MPTTN, 2019, p. 4)

Additionally, the number of registered e-commerce businesses reached a total of 3,988 by the end of March 2024, recording an average annual rate of 92% since 2020. However, only around 7% of these e-retailers, that to say 254 e-suppliers (see Fig.2), are in compliance with the provisions of Law No. 18-05 relating to e-

commerce. While online payment transactions for goods and services tripled between 2020 and 2024. However, most e-commerce activity remains domestically focused, and payments for goods still represent a small share of total transactions (0.8 per cent). (UNCTAD, Algeria: eTrade Readiness Assessment, 2025) Also, the number of merchant websites approved by the GIE Monétique has steadily increased, rising from 27 in 2018 to 510 by the end of May 2024, representing an average annual growth of 52%. This trend reflects the continued expansion of e-commerce in Algeria. (UNCTAD, 2025, p. 18)

Figure N° 2
Evolution of the number of e-merchants and e-suppliers in Algeria



Source: (UNCTAD, 2025, p. 18)

Correspondingly, the revenue in e-commerce market is projected to reach \$2.34 billion in 2025, this revenue is expected to show an annual growth rate of 3.46%, resulting in a projected market volume of \$2.77 billion by 2030. In the e-commerce market, the number of users is expected to amount to 14 m users by 2030. Besides, the user penetration is 27.1% in 2025 and is expected to hit 28.5% by 2030, and the average revenue per user is expected to amount to \$199.49. (Statisca, 2025)

A notable trend in Algerian e-commerce is a gradual shift towards digital payment methods, moving away from the historical reliance on cash-on-delivery. According to official statistics of the interbank electronic payment consortium, 379 web-based merchants in Algeria are currently enrolled in the interbank electronic payment system. Since the inception of internet-based electronic payments, a total of 30,030,178 transactions have been recorded (Mourad &

Taha, 2025, p. 10), and 14 startups are eligible to collaborate in the GIE Monétique's electronic money activities (Monetique, 2025).

Despite the fact that these transactions may not be considered e-commerce in the broadest sense, they represent the beginning of a transition towards expanding e-commerce activities. Nevertheless, cash-on-delivery remains the dominant payment method, accounting for approximately 90% of online transactions. This preference is influenced by low consumer trust in online payment systems, concerns regarding privacy and information security, and a general lack of familiarity with online transaction processes among a segment of the population. The Algerian e-commerce landscape also distinguishes itself by a strong emphasis on local products, it acts as a strategic lever for accelerating digital transformation, making digital technologies more accessible to businesses—particularly small and medium-

sized enterprises (SMEs)—and promoting financial inclusion by broadening access to new financial services through fast and secure payment solutions. (Bensekkaim, 2024)

3.3 Ecosystem metrics and rankings

The Algerian government has committed to upgrading the digital economy, and identifying international rankings related to startups, innovation, and improving Algeria's position. (Populaire, 2025)

In this context, Algeria's rankings in different reports marked by ups and downs. First, according to the doing business report (2020), Algeria is ranked 157 out of 190 countries in terms of ease of doing business. This low ranking points to a business environment with many obstacles, such as complex regulations and lengthy procedures for tasks like starting a business. In the same perspective, based on the global entrepreneurship index (2019), Algeria is ranked 88 out of 137 countries in terms of country's entrepreneurial ecosystem, where enterprise is a crucial engine of economic growth. This middle-to-low ranking shows that the country lacks key elements that foster entrepreneurship, such as a strong culture of innovation, access to funding, and supportive government policies. Accordingly, in 2025, Algeria is ranked 111th globally, up 4 spots from 2024, indicating a positive upward trend, and holds the 4th position in Northern Africa, according to the Startup Ecosystem Index. This shows that recent government initiatives and investments aimed at fostering entrepreneurship are beginning to have a tangible impact. While the country's overall ranking is still low on a global scale.

Taken together, these rankings suggest that even though entrepreneurship is a crucial engine for economic growth, Algeria's current economic and regulatory landscape is not conducive to its development.

From a digital perspective, the country ranked 101 out of 116 countries according to the digital platform economy index (2020) in terms of digital ecosystems and entrepreneurial ecosystems. Furthermore, corresponding to the global digital platforms power index 2023, Algeria categorized among lagging countries with potential but lagging factors like Weak regulation, lack of infrastructure support, the infancy of the ICT markets, etc., are holding them back. There is still a long way to go until digital platforms and their economic impact become noticeable in those countries. (Global digital platform power index , 2023, p. 40) In essence, Algeria is lagging significantly behind most of the world in building the essential digital foundations and supportive ecosystems needed to capitalize on the digital revolution.

In addition, conforming to the global digitalization index GDI-2024, which examined the investment and application of digital infrastructure, Algeria ranked 69 out of 77 countries. These countries are categorized as starters, adopters, and frontrunners based on their levels of ICT and economic development. Algeria is categorized among the starter countries, which are in the early stages of ICT infrastructure build-out; most of them are developing and emerging market countries. These countries face gaps in MBB coverage and fiber access and need to enhance connectivity in every aspect and give more people access to the digital economy. (Global digitalization index-GDI , 2024)

Another important benchmark measures the level of ICT development, is the ICT development index. The IDI scores of Algeria are: 77.8-80.9-86.1 out of 100 for the years 2023-2024-2025 respectively. The evolution of the IDI indicates a solid foundation of ICT development, an effective policies and investment in the ICT sector. In 2025, Algeria has climbed 15 places in the global ranking from 89th to 74th due to the

government commitment to digital transformation aligning with national strategy. (The ICT Development Index, 2025, p. 5)

Another significant view on innovation reveals that Algeria's "modest innovation" status, indicated by its score of 1,283 on the CTA's 2025 global innovation scorecard, shows that Algeria is not at the very bottom of the scale, but it's not

a strong performer either, and the country has recognized the value of innovation and is making active investments in fundamental elements such as startup support and digital infrastructure. (Global innovation scorecard CTA, 2025)

Table 2 summarizes the rankings of Algeria in different categories according to the global innovation scorecard 2025.

Table N° 2
Algeria's rankings according to CTA 2025

Grade	score	Acts Green	Actual Diversity	Allows Cross-Border Data flows	Blockchain friendly	Encourages Broadband	Encourages Global Tech Trade	Encourages Telehealth
Modest Innovator	1.283	C+	F	F	F	D+	F	A
Friendly to Digital Platforms	Fundamental Freedoms	Invests in skilled workforce	Maintains Pro-innovation legal environment	Promotes resilience & Digital transparency	R&D Friendly	Startups & small business friendly	Tax friendly	Welcomes self-driving vehicles
D	D-	B+	C-	D+	D+	F	B	C

Source: (Global innovation scorecard CTA, 2025, pp. 24-25)

The data presented in the aforementioned table reveals that Algeria's innovation and digital ecosystem is making progress, despite systemic weaknesses and significant barriers to digital transformation and entrepreneurship.

Encourages telehealth (A): This is Algeria's strongest area. The "A" grade indicates that the government has been very effective in promoting telehealth services. The success of this sector can serve as a model for other sectors, showing a clear political will and capability to implement pro-innovation policies in specific, targeted areas.

Invests in skilled workforce (B+): The high grade here is a positive significant. It suggests that Algeria is showing a strong commitment to investing in education and training, which is essential for a healthy innovation ecosystem. This aligns with a previous conclusion that Algeria's innovation inputs are more powerful than its outputs.

Tax friendly (B): This "B" grade suggests a relatively favourable tax environment for businesses. By simplifying and reducing the burdensome tax system, businesses can reduce costs and promote investment.

Friendly to digital platforms (D): This low grade indicates a lack of a supportive environment for digital platforms, such as e-commerce and social media.

Fundamental freedoms (D-): This grade shows a lack of transparency, rule of law, and freedom of expression, which are foundational to an environment where people feel secure to innovate and take risks.

Promotes resilience & digital transparency (D+): This grade indicates that the country is not sufficiently prepared to handle cyber threats or ensure a transparent digital environment, which can lead to eroded trust and discouraged digital adoption.

R&D friendly (D+): This grade shows that despite investments in human capital, the environment for research and development is not supportive of high-quality innovation. This is a crucial area that needs significant reform to bridge the gap between inputs and outputs.

Actual diversity (F): A low grade indicates a significant lack of inclusion in the workforce and business leadership, which can severely reduce creativity and problem-solving.

Allows cross-border data flows (F): This is a major obstacle to participation in the global digital economy. Restrictive data policies hinder international trade, investment, and collaboration, because they prevent businesses from using cloud services and connecting with global partners.

Blockchain friendly (F): The country's opposition to blockchain technology is a missed opportunity. Algeria's policies are preventing the adoption of this emerging technology, which could enhance transparency, improve financial services, and create new business models.

Encourages global tech trade (F): This low grade indicates the presence of high tariffs, import/export restrictions, or other obstacles that can isolate Algeria from the global technology market. This prevents local companies from

being able to access cutting-edge hardware and software, which hinders their ability to innovate.

Startups & Small business friendly (F): This is the most critical low grade. It confirms that the ecosystem for new and small businesses is extremely difficult to navigate due to burdensome regulations, a lack of funding, and a non-supportive legal environment. This is the direct reason why innovation investments are not being translated into higher-quality outputs.

The results of the different rankings, as appear in table 2, show consistency with Algeria's position in the Global Innovation Index (GII). Algeria is ranked 115 out 133 countries in the global innovation index 2024. Among 38 lower middle income group economies, Algeria ranked 29th, and within the 18 economies in Northern Africa and Western Asia, Algeria ranked 18th. Correspondingly, these metrics indicate that Algeria is making some progress in its innovation landscape by investing in innovation, but it is not effectively translating these investments into higher-quality outputs. (Soumitra, Bruno, Lorena Rivera, & Sacha, 2024)

Table 3 presents Algeria's ranking of the Global Innovation Index (GII) for the year 2025, according to innovation pillars.

Table N° 3

Algeria's global innovation index ranking 2024

Overall GII	Institutions	Human Capital & research	Infrastructur e	Market sophistication	Business sophistication	Knowledge & technology outputs	Creative outputs
115	95	76	94	132	114	125	109

Source : (Soumitra, Bruno, Lorena Rivera, & Sacha, 2024, p. 117)

As shown in table 3, the overall low rank is a direct result of the poor performance across almost all pillars, particularly in the output categories.

A key observation is that Algeria's innovation inputs are generally ranked higher than its innovation outputs. For example, the ranking of human capital & research, which is a key input, is a relatively strong 76. However, the knowledge & technology output rank is a very low 125. This

indicates a significant failure to turn investments in education and research into tangible, commercializable results such as patents and scientific publications. Another alarming benchmark is the market sophistication rank 132 out of 133. This pillar measures the strength of credit, investment, and trade, and Algeria's near-last-place position shows that the Algerian market is not conducive to innovation. It's difficult for innovators to get funding or bring their products to market.

Additionally, the ranking of 114 for business sophistication shows that the business environment is not supportive of innovation. This includes a lack of collaboration between universities and industry and a general lack of a supportive business climate.

4. Challenges of digital entrepreneurship in Algeria:

Despite the encouraging realities, Algerian digital entrepreneurs encounter specific and often formidable challenges that are specific to their context. These challenges are not isolated; they are interconnected, creating a negative feedback loop that impedes the ecosystem's maturation.

4.1 Lack of financial resources

Even though online businesses require a low entry cost, digital businesses may face challenges due to limited access to financial resources. (Panagiotis, 2022)

Traditional commercial banks are often hesitant to finance highly risky and innovative ventures because they rely on physical collateral and have a lack of practical experience in dealing with startups. For this reason, Algeria has established a specialized fund, the Algerian Startup Fund (ASF), its mission is to support the growth and development of startups in high-potential sectors such as technology, biotechnology, and FinTech. Conversely, the private venture capital market

and angel investor networks are still limited in scope and reach. (Hamza, Almi, & Boucenna, 2024, p. 252) This creates a major funding gap, particularly for startups seeking to scale beyond the initial seed stage, making it difficult for them to secure follow-on funding and larger investment rounds. Although crowdfunding has been legally introduced via platforms such as: NINVESTI and TWIZA, its full impact has yet to be realized. (Benlefki, Bouchetara, Saba, & Gahlam, 2024, p. 136) Therefore, entrepreneurs often utilize personal financing, love money to fund their ventures. (Salah & Samir, 2024, p. 3361)

4.2 Weak digital infrastructure

Digital infrastructure refers to digital tools and services, such as Wi-Fi networks, 5G, cloud computing, applications, data centers, digital makerspaces, and others, that are necessary for businesses to shape their information technology (IT) capabilities in response to various entrepreneurial activities. (Panagiotis, 2022, p. 12)

While Algeria is working hard to increase the flow of internet traffic and provide access to as many users as possible (khalallah & khaled, 2023, p. 790), the quality of internet infrastructure remains a challenge. The reality is that inconsistent internet speeds and limited fiber-optic coverage, particularly outside major urban centers, can hinder the development of bandwidth-intensive digital services. Additionally, the use of 4G networks for mobile internet and ADSL for fixed broadband limits international bandwidth and does not provide the gigabit speeds required for advanced digital services. The digital divide affects entrepreneurs' ability to reach a truly national market and can have an impact on the reliability of their offerings.

In this perspective, many objectives in the national strategy are set to strengthen the digital

infrastructure. The first objective is to guarantee high-quality connectivity for all individuals and households, with the goal of reaching 100% access. Second, connect public institutions/establishments, with the objective of achieving 100% access. Third, optimize investments made in connectivity and bandwidth, with the objective of achieving 100% profitability. There are also other objectives related to data centers and cloud services. (DIGITALIZATION, 2024, pp. 14-15)

4.3 Lack of digital security and trust

Creating trust among participants is a significant challenge for all businesses, but it's even more challenging for those that rely on non-face-to-face commerce. (Panagiotis, 2022, p. 13)

As the digital economy grows, so do cybersecurity risks. The Algerian government is cautious when it comes to data privacy and cybersecurity. (Digital Economy, 2024) The challenge for Algerian entrepreneurs is to build and maintain trust in an environment where consumers may be hesitant about online payments and data sharing. (Ismail & Amine, 2020, p. 18) The lack of widespread digital trust and the need to constantly invest in a robust security posture are major obstacles for new digital businesses.

4.4 Lack of digital skills-Raw talents

Given that more and more nations are becoming learning-based societies, digital skills related to technology are of utmost significance for digital entrepreneurship. (Panagiotis, 2022, p. 15)

A portion of the Algerian population, particularly in SMEs, lacks essential digital skills. Gradually, people are being educated to use more digital tools. The younger generations, who are more tech-savvy, are making more progress (Algeria: Digital Economy, 2024). In this perspective, the ministry of vocational training launched 40 new

digital specialties in June 2025 to improve technical competencies across the country. (Algeria Launches 40 New Digital Specialties, 2025) As well as the ministry of higher education launching many initiatives related to innovation and digitalization, but still the university system doesn't cover the needs of the market. (Ismail & Amine, 2020, p. 18)

The reality is that many highly skilled Algerian professionals in IT and related digital fields are searching for opportunities abroad, leading to a brain drain. While local universities are producing graduates, there is a gap between academic training and the practical skills required by the fast-paced digital industry. Such an imbalance makes it difficult for digital businesses to find and retain the specialized talent needed for growth.

In this context, two objectives in the national strategy are set to improve digital skills. First, ensure that the workforce in both public and private sectors receives enough active ICT specialists by achieving 500,000 active ICT specialists. Second, in order to reduce the brain drain of ICT skilled specialists, the objective is reducing this phenomenon by 40%. (DIGITALIZATION, 2024, p. 16)

4.5 Legal and regulatory obstacles

Although there have been efforts to reduce red tape, the regulatory environment is still considered as restrictive and slow to adapt to international digital trends. (STITI, 2025, p. 86)

The reality for digital entrepreneurs is that they face the challenge of outdated laws, long business registration processes, and a lack of specific legal frameworks for digital areas. Furthermore, antiquated laws and regulations prevent digital players from experimenting and scaling their initiatives. (Ismail & Amine, 2020, p. 18)

4.6 Business adoption of digital technologies

Many Algerian businesses are not familiar with digital technologies, particularly small and medium-sized enterprises (SMEs), are not fully familiar with digital tools and platforms. This is partly linked to the cost of the digital transformation and not enough awareness and understanding of its benefits. (Digital Economy, 2024) The skills gap within the population further exacerbates this issue, slowing the widespread adoption of digital tools across various sectors. While digital technologies offer a means to streamline operations, enhance collaboration, and share knowledge, a broader shift in institutional and societal mindsets is necessary for true digital transformation to occur.

In this context, two objectives in the national strategy are set to improve business of digital technologies. First, the initial step is to expand the use of digital systems in the internal management of SMEs/SMIs, with the objective of having 80% of them using digital systems. Second, the objective is to achieve 100,000 companies/startups operating in the digital domain by boosting the creation of companies/startups in the digital field. (DIGITALIZATION, 2024, pp. 18-19)

5. Conclusion

Algeria's digital entrepreneurship has an incredible potential, but it also faces significant structural challenges. The reality is that a young, connected, and increasingly savvy population provides a solid foundation for a prospering digital economy. However, the future of this sector depends on the ability of the government, investors, and entrepreneurs to collaborate and address the systemic obstacles. These include reforming the regulatory environment to foster innovation, establishing a robust and accessible financial ecosystem, investing in quality digital infrastructure, and developing strategies to retain and foster a skilled local talent pool. Although

there are challenges, a joint effort to overcome them will be crucial in unlocking the full potential of digital entrepreneurship as a catalyst for diversification and prosperity in Algeria.

Algeria's path forward is not about starting from scratch, but about leveraging its hard-earned achievements by strategically addressing these systemic challenges. To create a more resilient and sustainable digital entrepreneurial ecosystem, a series of recommendations can be proposed:

1. High priority: Regulatory and financial restructuring

- Overcoming legal and regulatory obstacles by modernizing regulatory frameworks and simplifying business registration.

- Addressing the lack of financial resources by diversifying funding sources, promoting crowdfunding, and establishing mentorship and accelerator programs.

2. Strategic priority: Infrastructure and human capital

- Strengthening digital infrastructure by prioritizing fiber-optic expansion, encouraging private sector investment and promoting cloud services and data centers.

- Cultivating digital skills and retaining talent by bridging the skills gap to meet the practical needs of the digital industry. Additionally, retain raw talent by creating high-value job opportunities, improving the work environment and providing incentives for returnees.

3. Transformative priority: Cultural adoption and trust

- Increasing business adoption of digital technologies through launching awareness campaigns and provide training. Also, providing financial support for digital transformation and showcasing success stories of digital businesses.

- Enhancing digital security and trust by launching public awareness campaigns, strengthening legal frameworks and promoting cybersecurity skills.

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