

Catalyzing Algerian Startups: AI and Blockchain for Digital Entrepreneurship Growth

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Abstract

This study examines the role of Artificial Intelligence (AI) and Blockchain technologies as catalysts for digital entrepreneurship in Algeria. It synthesizes an analysis of the country's strategic policy framework with a critical assessment of the evolving opportunities and persistent challenges. The research argues that while government-led initiatives have created a nascent ecosystem, a more mature and inclusive regulatory, financial, and infrastructural environment is required to fully leverage the synergistic potential of AI and Blockchain for sustainable, diversified economic growth. The paper provides a detailed case study of Yassir, a leading Algerian "super-app," and offers a comparative analysis with the ecosystems of Egypt and Tunisia to derive actionable policy recommendations.

Keywords: AI, blockchain, digital entrepreneurship, startups, innovation challenges.

JEL Classification Codes: L26, O31, M13, Q55, R11.

تعزيز الشركات الناشئة الجزائرية: الذكاء الاصطناعي والبلوكشين لنمو ريادة الأعمال الرقمية

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ملخص

تبحث هذه الدراسة في دور تقنيات الذكاء الاصطناعي (AI) والبلوكشين كمحفزات لريادة الأعمال الرقمية في الجزائر. وهي تجمع بين تحليل إطار السياسة الاستراتيجية للبلاد وتقييم نقدي للفرص المتطورة والتحديات المستمرة. تجادل الدراسة بأنه في حين أن المبادرات التي تقودها الحكومة قد أنشأت نظامًا بيئيًا ناشئًا، إلا أن هناك حاجة إلى بيئة تنظيمية ومالية وبنية تحتية أكثر نضجًا وشمولية للاستفادة الكاملة من الإمكانيات التآزرية للذكاء الاصطناعي والبلوكشين من أجل نمو اقتصادي مستدام ومتنوع. يقدم البحث دراسة حالة مفصلة عن "Yassir، التطبيق الخارق" الجزائري الرائد، ويقدم تحليلًا مقارنًا للأنظمة البيئية في مصر وتونس لاستخلاص توصيات سياسية قابلة للتنفيذ.

الكلمات المفتاحية: الذكاء الاصطناعي، البلوكشين، ريادة الأعمال الرقمية، المؤسسات الناشئة، تحديات الابتكار.

رموز تصنيفات JEL: L26, O31, M13, Q55, R11

1. Introduction

1.1. Contextualizing Digital Entrepreneurship in the MENA Region

The global economy is undergoing a profound digital transformation, a trend that has accelerated significantly in the wake of the COVID-19 pandemic. Global e-commerce sales reached an estimated \$26.7 trillion in 2020, representing 30% of global GDP, a clear indicator of the scale of this shift (UNCTAD, 2021; UNCTAD, 2023). Developing countries across the globe are recognizing the urgent necessity of transitioning their economies to keep pace with these new digital paradigms. In the Middle East and North Africa (MENA) region, this shift is particularly critical, as many nations are actively seeking to diversify their economic models away from a traditional dependence on hydrocarbon and rent-based economies (Khalfallah & Bendjelloul, 2023; Zakaria et al., 2025).

The MENA startup ecosystem, while facing a 42% year-on-year decline in total funding to \$2.3 billion in 2024, has shown a notable resilience (Abdel Azim, 2025). This downturn in value was accompanied by a 3.5% increase in the number of deals, reaching 610 (Abdel Azim, 2025). This trend suggests a fundamental shift in the funding landscape, moving away from a few large "mega-deals" towards a broader base of early-stage investments. This change signals a maturation of the ecosystem, as sustained investor interest across a wider number of ventures indicates a more resilient and distributed foundation. For Algeria, which has historically struggled with a dearth of late-stage growth capital, this emerging regional pattern represents a unique opportunity to build a robust and decentralized foundation of early-stage, technology-driven ventures.

1.2. The Transformative Potential of AI and Blockchain

Individually, AI and Blockchain have already driven significant innovation across various domains. Blockchain, as a distributed ledger technology, provides a foundation of trust, transparency, and security through mechanisms such as smart contracts, decentralized finance (DeFi), and immutable record-keeping (Omar et al., 2021; Blockchain Technology in MENA, 2023). These features are crucial for reducing transaction costs and the need for traditional intermediaries, thereby lowering barriers to entry for digital businesses (Omar et al., 2021; Globalialogisticsnetwork, 2021).

In parallel, AI offers powerful tools for data analysis, decision-making, and customer engagement, enabling entrepreneurs to streamline operations through automation, predictive analytics, and personalized marketing (Omar et al., 2021; Globalialogisticsnetwork, 2021).

The true transformative potential, however, lies in the synergistic integration of these two technologies. The literature notes this is a "burgeoning area of research" (Omar et al., 2021). In this combined model, blockchain provides a secure and transparent foundation for data storage, while AI processes and analyzes this data to generate actionable insights (Omar et al., 2021; Aethir, 2025).

The synergy creates a closed-loop system of data-driven decision-making and trustless execution. This is particularly valuable in developing economies often characterized by low trust, bureaucratic opacity, and large informal sectors. Blockchain can help formalize transactions and establish a verifiable history (Blockchain in Logistics, 2023), while AI can then analyze these newly formalized data streams to optimize operations (C3.ai, 2025). This presents a powerful opportunity for nations like Algeria to bypass outdated legacy systems and leap-frog directly to modern, efficient, and trust-based digital platforms.

1.3. Research Objectives and Scope

This paper aims to analyze Algeria's evolving entrepreneurial ecosystem, evaluate the role of AI and Blockchain within its strategic policy framework, and provide a comparative perspective to offer targeted policy recommendations. The research is guided by the following core questions:

- a) What opportunities for digital entrepreneurship are created by Algeria's National Strategy for Digital Transformation (SNTN-2030), and how do AI and Blockchain align with its pillars?
- b) How does a leading Algerian startup, Yassir, serve as an archetype for leveraging AI-driven business models to overcome local challenges?
- c) What specific financial, regulatory, and infrastructural challenges persist in the Algerian ecosystem, and how do they constrain the adoption of AI and Blockchain?
- d) What lessons can be derived from the experiences of regional peers like Egypt and Tunisia to inform a more effective policy approach for Algeria?

2. Foundational Concepts

2.1. The Synergistic Potential of AI and Blockchain in Practice

The convergence of AI and Blockchain creates operational synergies that enhance the performance and reliability of digital applications (Aethir, 2025). This integration can be visualized as a two-layer system: the blockchain layer provides an immutable and secure record of all transactions, while the AI layer leverages these secure datasets to extract actionable insights and automate processes (Omar et al., 2021; Aethir, 2025).

For example, in a decentralized marketplace, AI algorithms can analyze user preferences to recommend products or services, while blockchain verifies and records the transactions, thereby fostering a high level of trust in peer-to-peer networks (Omar et al., 2021; Aethir, 2025). Similarly, smart contracts on a blockchain platform can automate agreements, while AI algorithms evaluate the terms and monitor compliance in real time (Omar et al., 2021; Globalialogisticsnetwork, 2021).

This combined application is highly relevant for sectors plagued by complexity and low trust, such as logistics and supply chain management. In this domain, AI-powered predictive analytics optimizes routes, manages inventory, and forecasts demand, leading to a significant reduction in response times and overall supply chain costs (Predictive Analytics, 2024; C3.ai., 2025).

Concurrently, blockchain technology provides transparency and traceability by digitizing the entire process, reducing administrative costs, and verifying the provenance of goods (Blockchain in Logistics, 2023; Globalialogisticsnetwork, 2021). Research on trade innovations in countries like Tunisia demonstrates that measures that reduce transaction costs and simplify procedures are more significant for productivity growth than traditional investments in research and development (Trade Transaction Costs, n.d.).

This indicates that for Algeria, investing in the synergy of AI and Blockchain is not merely about technological modernization, but a direct strategy to address fundamental economic friction points, such as high bureaucratic costs and a lack of transactional trust (Omar et al., 2021; Globalialogisticsnetwork, 2021; Trade Transaction Costs, n.d.).

2.2. Defining a Digital Entrepreneurial Ecosystem

A thriving digital entrepreneurial ecosystem is a multifaceted system that requires the alignment of several key components. The World Bank identifies a number of these foundational elements, including reliable digital and data infrastructure, a pipeline of human capital with digital literacy and local AI talent, and a local ecosystem with access to funding and innovation clusters (World Bank, 2024).

A deficiency in one area can significantly impede progress in others. For instance, a lack of funding or an unstable regulatory environment can hinder the growth of even the most innovative ventures (Khalfallah & Bendjelloul, 2023; Zakaria et al., 2025). The World Bank's research on AI governance emphasizes that a one-size-fits-all approach is ineffective, stating that "AI governance cannot be imported wholesale—it must be built locally, shaped by local infrastructure, institutions, and values" (World Bank, 2024).

This is a critical consideration for Algeria, as it suggests that the success of AI and Blockchain adoption will depend on a bottom-up, context-specific approach that tailors global best practices to the country's unique challenges and strengths. Simply copying foreign models without considering local realities can lead to a disconnect between policy and practical application, a core theme that will be explored further in this analysis.

2.3. Global State of AI and Blockchain Governance

The global discourse around AI and Blockchain governance is active and evolving, with governments and international bodies exploring various regulatory mechanisms. The World Bank identifies a toolbox of governance strategies, including "soft law" (e.g., national principles and voluntary codes), "hard law" (e.g., the EU AI Act), and "regulatory sandboxes" (World Bank, 2024). While these tools provide a roadmap, their effective implementation and enforcement capacity remain a significant challenge, particularly for lower- and middle-income countries that may lack the resources and institutional maturity to fully enact them (World Bank, 2024).

The disconnect between the existence of a policy and its enforcement is a crucial factor to consider. A research paper on Algeria's regulatory framework notes that while new laws (e.g., Decree 20-254) were designed to provide significant freedoms for startups, a World Bank survey found that only 12% of startups reported that officials consistently applied these provisions (Zakaria et al., 2025). This points to a more fundamental problem of institutional inertia and a gap between policy declaration and on-the-ground reality.

This gap is a major theme throughout this paper, as it explains why, despite a clear national strategy, significant challenges remain in mobilizing private capital and building a truly decentralized entrepreneurial ecosystem (Zakaria et al., 2025).

3. Algeria's Strategic Framework for Digital Growth

3.1. The National Strategy for Digital Transformation (SNTN-2030)

Algeria has outlined an ambitious vision for its digital future through the National Strategy for Digital Transformation (SNTN-2030), crafted by the High Commission for Digitalization. This strategy serves as a detailed blueprint to modernize public administration, boost the digital economy, and strengthen national digital sovereignty (High Commission for Digitalization, 2024).

The plan is built on five key pillars: Infrastructure, Human Capital, Digital Governance, Digital Economy, and Digital Society, each addressing specific objectives such as establishing national data centers, training ICT professionals, and increasing the digital economy's GDP contribution (High Commission for Digitalization, 2024).

Table 1 | Pillars of Algeria's SNTN-2030 and Their Impact on Startups

Pillar	Policy Goal (as per SNTN-2030)	Relevance for Startups
Infrastructure	Developing robust ICT infrastructure, including telecommunications networks and data centers.	Enables reliable cloud services and connectivity, reducing operational costs.
Human Capital	Building human capital by training professionals in digital competencies.	Provides a pipeline of skilled local talent for tech-driven ventures.
Digital Governance	Enhancing administrative efficiency and promoting transparent governance.	Streamlines business registration and administrative processes, reducing bureaucratic friction.
Digital Economy	Fostering a culture of innovation and supporting the growth of digital startups.	Creates a supportive environment for new ventures and encourages private sector participation.
Digital Society	Ensuring inclusive access to digital technologies for all citizens.	Expands the potential user base for digital products and services nationwide.

Source: (High Commission for Digitalization, 2024; Khalfallah & Bendjelloul, 2023)

The strategy's focus on "Digital Governance" and "transparent governance" (High Commission for Digitalization, 2024) aligns closely with blockchain technology's potential to reduce bureaucracy, enhance transparency in public processes, and combat corruption (Khalfallah & Bendjelloul, 2023). This alignment highlights a significant synergy between the government's objectives and the technological capabilities under consideration, offering clear opportunities for digital entrepreneurs to leverage these developments.

3.2. The Evolution of Algeria's Startup Ecosystem

Despite its nascent stage, Algeria's startup ecosystem is demonstrating measurable growth. The country ranks 111th globally and 4th in North Africa, with an annual growth rate of 7.2% from April 2024 to April 2025 (Startup Blink, 2025). The average investment raised by Algerian startups is approximately \$7.25 million, supported by a state fund with a mandate to invest up to \$411 million in local ventures (Zakaria et al., 2025). The Algiers Stock Exchange also experienced a 43% rise in market capitalization in the first half of 2025, driven by new listings, including a consulting startup (Daba Finance, 2025).

However, a closer look at the data reveals a significant concentration of this reported growth. According to StartupBlink, Algeria has a relatively small base of just 32 startups, which represents only 4% of all startups in Northern Africa (Startup Blink, 2025). Furthermore, Algiers is the only city from Algeria to be featured in the global rankings, and its ecosystem has a negative annual growth rate of -2.1% (Startup Blink, 2025). The impressive growth on the Algiers Stock Exchange in H1 2025 was largely driven by the listings of the Local Development Bank and a single consulting startup (Daba Finance, 2025). This suggests that much of the reported progress is centralized and potentially driven by a small number of entities or top-down public initiatives, rather than a broad, organic, and widespread entrepreneurial movement. The uneven development of the ecosystem is a critical challenge that needs to be addressed to ensure inclusive growth (Zakaria et al., 2025).

3.3. Government and Private Sector Catalysts

Algeria's government is actively engaging in ecosystem development through various initiatives. The Ministry of Knowledge Economy, Startups and Micro-enterprises oversees Algeria Venture, the nation's first state-owned startup accelerator (Algeria Venture, 2025). This organization aims to empower entrepreneurs and support regional incubators, providing strategic guidance and resources to scale ventures (Algeria Venture, 2025).

The private sector is also contributing to this effort. Leancubator, an Algerian innovation hub, has supported over 350 startups and organized more than 40 innovation challenges, fostering a community of over 200,000 members (Leancubator, 2025). The telecom giant Djezzy launched an Open Innovation Challenge in partnership with the Algeria Startup Challenge, offering a 200,000 DZD support grant for solutions that tackle the digital divide (Djezzy, 2025).

The challenge's focus on "digital inclusion solutions" (Djezzy, 2025) aligns directly with the SNTN-2030's pillar of a "Digital Society" (High Commission for Digitalization, 2024). This demonstrates a convergence of private sector interests with national policy goals, suggesting a coordinated, top-down approach to ecosystem building. However, the relatively small grant size compared to the average startup funding indicates that these challenges are more about scouting early-stage talent and co-opting innovative ideas rather than providing significant, scalable growth capital (Djezzy, 2025; Zakaria et al., 2025).

4. Case Study: An Archetype of AI-Driven Growth

4.1. The Yassir Business Model and Technological Foundation

Yassir stands as a prominent success story within the Algerian startup ecosystem, serving as an archetype for how technology can be used to overcome local challenges and build a scalable business. Launched in 2017 by Nouredine Tayebi and Mahdi Yettou, the company has grown into a "super-app" operating in six countries and 45 cities, serving over 8 million users and 100,000 partners (Abramundi, 2023; Yassir, 2022). The platform offers a suite of on-demand services including ride-hailing, food and grocery delivery, and financial services (Abramundi, 2023; Yassir, n.d.). Yassir's technological foundation is critical to its success. Its ride-hailing and delivery services leverage Google Maps' Geocoding and Directions APIs (Woolpert, 2022).

This allows the app to adapt to cultural nuances and a lack of precise addresses by enabling users to select destination points rather than exact street numbers (Woolpert, 2022).

This is a prime example of a startup using technology to navigate a specific on-the-ground infrastructural challenge in a developing country, demonstrating the importance of adapting global technologies to local contexts. Yassir also uses chatbots to enhance the user experience and accommodate cultural differences (Woolpert, 2022). Beyond these features, the company's platform leverages AI for "personalized user experiences" and to optimize its "sophisticated logistics and payment infrastructure" (Yassir, n.d.).

4.2. Leveraging Technology to Overcome Local Challenges

Yassir's business model extends beyond simple service provision to address fundamental economic friction points in a cash-centric economy. The company's core values include "Transparency & Trust" (Yassir, n.d.), and its mission is to "build a trusted ecosystem that empowers individuals and businesses, driving digital transformation in traditionally cash-centric economies" (Yassir, n.d.). This focus is central to its value proposition.

The company's emphasis on transparency, trust, and transitioning a cash-based economy strongly correlates with the core benefits of blockchain technology, namely its ability to provide immutability, transparency, and reduced reliance on intermediaries (Globalialogisticsnetwork, 2021; Blockchain in Logistics, 2023).

Although the provided sources do not explicitly state that Yassir uses blockchain, the parallels between its stated values and blockchain's capabilities are striking. The company's business model, particularly its financial services and logistics verticals, is a prime candidate for blockchain integration.

For example, blockchain could formalize payment records and automate agreements via smart contracts, further enhancing the trust and transparency that Yassir aims to cultivate. This case study demonstrates how an innovative company is already solving problems that are uniquely addressed by the synergy of AI and blockchain, providing a tangible example of the potential for future, more integrated business models in Algeria.

5. Critical Analysis of Challenges and Constraints

5.1. Financial and Investment Barriers

Despite the positive developments, the Algerian entrepreneurial ecosystem faces significant financial hurdles. A primary challenge is the limited access to capital markets and traditional bank financing, as startups often lack the collateral, financial track records, and historical accounting data that financial institutions require to assess risk (Khalfallah & Bendjelloul, 2023).

The legal framework for startups is also relatively new, with most of the specific legislation enacted after 2020, which has created a gap in the mobilization of private capital (Zakaria et al., 2025). A significant concern is the highly state-centric nature of the funding landscape. The legal framework's "institutional path dependencies" have resulted in 78% of venture capital remaining under state control, which can crowd out private investment and limit the diversity of funding sources (Zakaria et al., 2025).

While the state's announced \$411 million fund signals a strong commitment to the sector, this model concentrates decision-making and may not be as agile or effective at identifying high-growth, early-stage opportunities as the private sector (Zakaria et al., 2025). The observed concentration of growth in a few large deals or listings, such as the single consulting startup driving the stock market's growth, may be a manifestation of this state-driven model (Daba Finance, 2025).

This challenges the notion of a broad, organic entrepreneurial ecosystem and highlights the need for a more decentralized and inclusive funding environment.

The metrics presented in the below table provide a sobering look at Algeria's startup ecosystem. While a national ranking of 111th globally and 4th regionally might appear promising at first glance, a closer look reveals a highly concentrated and nascent environment. The low number of total startups (just 32) underscores that the ecosystem is still in its infancy and lacks the broad base of innovation seen in more developed markets. This highlights the urgent need for policies that can foster a culture of entrepreneurship beyond major urban centers like Algiers.

Table 2 | Key Funding Metrics for the Algerian Startup Ecosystem

Metric	Details
Global Ranking	111th worldwide.
Regional Ranking	4th in Northern Africa.
Number of Startups	32 total startups.
Average Investment Raised	\$7.25 million on average.
State-Controlled VC	78% of venture capital is state-controlled.
Growth Rate (Annual)	7.2% from April 2024 to April 2025.
Startup Challenge Subsidies	120+ million Dinars in contracts and subsidies obtained.

Source: (Algeria Startup Challenge, n.d.; Startup Blink, 2025; Zakaria et al., 2025).

The funding metrics further expose the challenges. The fact that 78% of venture capital is under state control is a critical finding. While this demonstrates a strong, top-down government commitment to the sector, it also raises concerns about institutional path dependencies and potential to crowd out private investment.

An over-reliance on state funding can limit the diversity of ideas, slow down decision-making, and create a less agile environment than one driven by competitive private capital.

Moreover, the average investment raised of \$7.25 million is a statistic that needs to be interpreted with caution. It is likely skewed by a small number of large deals, masking the fact that many startups still struggle to secure the seed and early-stage capital needed to scale. The relatively small support grants offered through initiatives like the Startup Challenge, while valuable for early-stage scouting, are insufficient to support the long-term growth of a truly competitive ecosystem.

5.2. Regulatory and Legal Gaps

The regulatory framework is a major bottleneck for the adoption of emerging technologies. The Algerian regulatory environment is described as "restrictive" and slow to adapt to international digital trends (U.S. Dept. of Commerce, 2024).

A critical gap remains in the legal provisions for high-growth ventures, particularly those leveraging AI and Blockchain technologies (Zakaria et al., 2025). The country lacks specific regulatory frameworks for issues such as AI liability, data use, and the application of blockchain in fintech (Zakaria et al., 2025).

This legal ambiguity increases the risk for both entrepreneurs and investors, creating disproportionate barriers to entry and scalability for startups operating in these areas.

Furthermore, there is a clear gap between formal legal rules and their practical enforcement. As noted in a World Bank survey, despite new decrees providing significant freedoms for startups, only a small fraction of entrepreneurs reported consistent application of these provisions by officials (Zakaria et al., 2025). This points to a deeper, institutional challenge of translating strategic policy into on-the-ground reality, which can undermine efforts to modernize and streamline the economy.

The critical challenges facing Algeria's startup ecosystem, as outlined in the table below, are multifaceted and interconnected. The issues can be categorized into financial, regulatory, and infrastructural hurdles. In the financial domain, limited access to traditional bank financing and a lack of financial track records for new ventures are significant barriers (Khalfallah & Bendjelloul, 2023).

This is compounded by the fact that the majority of venture capital remains under state control, a phenomenon that can stifle a dynamic and competitive funding environment by crowding out private investors (Zakaria et al., 2025). These financial constraints push entrepreneurs to rely on self-funding or limited state support, hindering their ability to scale rapidly.

On the regulatory front, the legal framework is struggling to keep pace with the rapid evolution of digital technologies. Algeria's regulatory environment is described as "restrictive" and slow to adapt to global trends, creating significant legal ambiguity for startups working with AI, Blockchain, and fintech (U.S. Dept. of Commerce, 2024; Zakaria et al., 2025). This lack of clear rules increases risk for both entrepreneurs and investors, making it difficult to launch and scale innovative solutions in critical sectors.

A particularly salient issue is the gap between the formal laws on the books and their practical enforcement by officials, as evidenced by a World Bank survey which found that only a small percentage of startups experienced consistent application of new provisions (Zakaria et al., 2025). This institutional inertia undermines trust and creates unpredictable bureaucratic hurdles.

Finally, infrastructural challenges, such as an incomplete digital network and limited high-speed broadband in rural areas, create a digital divide that restricts the market reach of startups and prevents them from achieving nationwide scalability (U.S. Dept. of Commerce, 2024).

The Digital Innovation Matrix provides a valuable framework for Algerian entrepreneurs and policymakers to strategically evaluate projects within a constrained ecosystem. Instead of pursuing every idea, this tool encourages a balanced approach that weighs potential impact against real-world feasibility. For a developing country, this kind of strategic prioritization is essential for allocating scarce resources efficiently.

Table 3 | Key Challenges in the Algerian Startup Ecosystem

Challenge Category	Specific Issues	Impact on Ecosystem
Financial	♦ Limited access to bank financing; Lack of financial track records.	♦ Hinders capital access, forcing reliance on self-funding or limited state support.
	♦ State-centric venture capital and limited private capital mobilization.	♦ Crowds out private investment and concentrates funding decisions in a few entities.
Regulatory	♦ Outdated legal frameworks and slow adaptation to digital trends.	♦ Creates legal ambiguity and disproportionate barriers for tech-focused ventures.
	♦ Lack of clear regulations for AI and Blockchain applications.	♦ Increases risk for startups and investors, limiting innovation in critical sectors.
	♦ Gap between formal rules and practical enforcement.	♦ Institutional inertia and bureaucratic hurdles undermine the stated policy goals.
Infrastructural	♦ Incomplete digital infrastructure and limited high-speed broadband in rural areas.	♦ Creates a digital divide and limits market reach for startups.

Source: (Khalfallah & Bendjelloul, 2023; Zakaria et al., 2025; U.S. Dept. of Commerce, 2024).

The High Impact, Low Feasibility quadrant is particularly relevant for Algeria. Examples like a fully autonomous drone delivery system, while having high potential, face significant barriers due to the country's infrastructural and regulatory challenges. These projects require a robust digital infrastructure, which is still unevenly distributed, and clear legal frameworks for issues like AI liability and autonomous systems, which are currently lacking (U.S. Dept. of Commerce, 2024; Zakaria et al., 2025). Investing heavily in such projects without first addressing the foundational issues is a high-risk, low-reward strategy that could lead to failure.

Conversely, the High Impact, High Feasibility quadrant represents the "sweet spot" for Algeria's ecosystem. The example of an AI-driven customer service chatbot for e-commerce platforms is highly applicable, as it leverages the country's high mobile internet penetration and widespread social media use (DataReportal, 2025; U.S. Dept. of Commerce, 2024). Such projects can deliver significant value by improving customer service and optimizing operations without requiring the kind of large-scale infrastructure and regulatory reform that more ambitious projects would demand. Focusing on these kinds of feasible yet impactful solutions can lead to a more resilient and sustainable growth trajectory.

Table 4 | Digital Innovation Risk and Feasibility Matrix for Algerian Startups

Quadrant	Description	Example in an Algerian Context
High Impact, High Feasibility	› Innovations that are highly impactful and feasible, representing a prime candidate for immediate investment.	› AI-driven customer service chatbots for e-commerce platforms, leveraging existing mobile and social media networks.
High Impact, Low Feasibility	› High-stakes projects with significant potential impact but considerable risks and technical hurdles.	› A fully autonomous drone delivery system for last-mile logistics in a country with limited address precision and evolving regulations.
Low Impact, Low Feasibility	› Projects that offer minimal innovation and are difficult to implement, generally not worth pursuing.	› Integrating an outdated technology to a legacy system, such as a paper-based administrative process.
Low Impact, High Feasibility	› Projects that are safe and easy to implement but offer limited growth or transformative potential.	› A minor software update to an existing application or a basic website refresh without adding new features.

Source: (Appfluence, n.d.)

6. Lessons from Regional Counterparts

6.1. The Egyptian Model

Egypt's startup ecosystem offers a valuable contrast to Algeria's, demonstrating a more mature and robust model. Egypt is the most populous country in the MENA region and a top three tech market by funding, with a global ranking of 65th and a leading position in North Africa (CCFA, 2024; Startup Blink, 2025). Its ecosystem is home to 563 startups, significantly more than Algeria's 32 (Startup Blink, 2025).

Egypt's strengths lie in its favorable demographics and strategic focus. The country has a large, young population, with 76% of citizens under the age of 40, and a high internet penetration rate of 70% (CCFA, 2024).

This provides a massive, digitally savvy consumer base for technology startups. Furthermore, Egypt's higher education system produces over 500,000 graduates each year, 40% of whom are from STEM fields, ensuring a strong talent pipeline (CCFA, 2024).

The country's government has actively supported entrepreneurship, leading to a focus on solving a core national problem: financial exclusion. The fintech sector, which has attracted significant investment to address the needs of a large unbanked population, remains Egypt's top industry by funding (MAGNiTT, 2024).

This targeted, sector-specific approach provides a key lesson for Algeria: rather than a broad, multi-sector strategy, focusing on high-impact sectors where AI and Blockchain can solve clear, local problems could attract concentrated investment and accelerate growth.

6.2. The Tunisian Experience

Tunisia's approach, while different from Egypt's, also provides instructive lessons. UNCTAD has conducted an eTrade Readiness Assessment for Tunisia, a structured review of the e-commerce ecosystem designed to provide a roadmap to address weaknesses (UNCTAD, 2025; World Bank, 2022). This proactive engagement with international bodies highlights a focused approach to digital transformation.

Furthermore, UNCTAD has a dedicated project to help developing countries use blockchain technology to facilitate trade and enhance competitiveness (UNCTAD, 2025). Academic research on Tunisia confirms that "trade innovations," which reduce transaction costs and simplify procedures, lead to significant productivity growth (Trade Transaction Costs, n.d.).

The focus on using blockchain to reduce "unobservable" indirect transaction costs, such as the costs of searching for partners, negotiating, and monitoring, is a highly relevant and granular strategy (Trade Transaction Costs, n.d.). This provides a concrete lesson for Algeria: in addition to a broad national strategy, the country should focus on specific, high-impact applications of AI and Blockchain to solve well-defined problems like reducing bureaucratic friction in trade and commerce.

Table 5 | Comparative Metrics of North African Startup Ecosystems

Metric	Algeria	Egypt	Tunisia
Global Ranking (StartupBlink)	111th	65th	Trailing Morocco
Regional Ranking (North Africa)	4th	1st	2 nd
Number of Startups	32	563	N/A
Total Funding (2024)	Stable%	\$334M - \$384.6M	\$13.1M

Source: (Abdel Azim, 2025; MAGNiTT, 2024; Startup Blink, 2025)

The comparative metrics in this table underscore Algeria's relative position within the North African startup ecosystem, highlighting key areas of strength and weakness. While Algeria ranks 4th in the region and 111th globally, its ecosystem is notably smaller and less developed than Egypt's. The stark contrast in the number of startups—563 in Egypt versus just 32 in Algeria—indicates that Egypt's ecosystem is far more mature and diversified, providing a much larger pool of ventures for investment and collaboration (Startup Blink, 2025).

The funding data further reinforces this disparity. Although Algeria's funding remained stable in 2024, the total amount raised is not comparable to Egypt's, which attracted between \$334 million and \$384.6 million in the same year (Abdel Azim, 2025; MAGNiTT, 2024).

This significant difference in capital flow points to a more robust investor confidence and a more dynamic market in Egypt. The concentration of funding in a few top countries like Egypt, the UAE, and Saudi Arabia is a known regional trend that Algeria must actively work to counter by building a more attractive investment environment (Abdel Azim, 2025).

Tunisia, with a smaller but still significant funding total of \$13.1 million, also demonstrates a more focused approach to digital trade and e-commerce, offering a valuable model for targeted policy interventions (Abdel Azim, 2025; UNCTAD, 2025).

This comparison provides a clear roadmap for Algeria: to elevate its position, the country cannot rely on a few flagship projects but must focus on building a broader, more distributed entrepreneurial base to attract a larger volume of early-stage investment.

Table 6 | SWOT Analysis of the Algerian Digital Entrepreneurship Ecosystem

Strengths (Internal, Positive)	Weaknesses (Internal, Negative)
<ul style="list-style-type: none">⌘ Clear National Strategy (SNTN-2030),⌘ Active government support and initiatives (Algeria Venture),⌘ Measurable ecosystem growth and stable funding,⌘ Strong flagship companies like Yassir leading the way,	<ul style="list-style-type: none">⌘ State-centric funding model crowds out private capital,⌘ Regulatory gaps for emerging technologies (AI, Blockchain),⌘ Limited number of startups (32 total) and geographic concentration in Algiers,⌘ Disconnect between legal framework and on-the-ground enforcement,
Opportunities (External, Positive)	Threats (External, Negative)
<ul style="list-style-type: none">⌘ Integrating AI and Blockchain to solve local problems like trust and bureaucracy,⌘ Private sector initiatives can co-create solutions and foster a vibrant ecosystem,⌘ Leveraging regional integration for market expansion through initiatives like the AfCFTA,⌘ Focused efforts can accelerate growth in high-impact sectors like fintech and logistics,	<ul style="list-style-type: none">⌘ Fierce competition from foreign companies (e.g., Chinese tech firms),⌘ High shutdown rates and lack of a "failing forward" culture,⌘ Skilled talent shortage and "brain drain" to more developed markets,⌘ Bureaucratic inertia that resists change and modern practices,

Source: (Algeria Venture, 2025; Djezzy, 2025; High Commission for Digitalization, 2024; Khalfallah & Bendjelloul, 2023; Mahroum, 2025; Omar et al., 2021; Startup Blink, 2025; Trade Transaction Costs, n.d.; U.S. Dept. of Commerce, 2024; UNCTAD, 2025; Yassir, n.d.; Zakaria et al., 2025).

The SWOT analysis provides a comprehensive synthesis of the internal and external factors influencing the Algerian digital entrepreneurship ecosystem. It shows a clear picture of an environment that is driven by strong top-down vision but hindered by systemic weaknesses.

The strengths—such as a clear national strategy and active government support—are commendable and provide a solid starting point for development, signaling a political will to diversify the economy beyond hydrocarbons (High Commission for Digitalization, 2024; Algeria Venture, 2025). However, these strengths are undermined by significant weaknesses. The most prominent of these is the state-centric nature of the funding landscape and the persistent regulatory and legal gaps.

The disconnect between a well-intentioned legal framework and its inconsistent enforcement on the ground creates a climate of uncertainty for entrepreneurs and investors alike (Zakaria et al., 2025). This is a crucial internal challenge that must be overcome to fully realize the strategic goals outlined in the SNTN-2030. On the external front, Algeria has clear opportunities to leverage its young population and regional position to drive growth.

The use of AI and Blockchain to solve pervasive local problems like bureaucracy and trust, as demonstrated by companies like Yassir, presents a major opportunity for leapfrogging (Omar et al., 2021; Khalfallah & Bendjelloul, 2023). However, this potential is threatened by fierce competition from more established foreign tech firms and a domestic talent shortage that can lead to a "brain drain" (U.S. Dept. of Commerce, 2024; Mahroum, 2025). To mitigate these threats, Algeria must double down on its commitment to fostering a truly private and decentralized ecosystem, making it a place where talent is not only nurtured but also retained.

7. Strategic Recommendations and Policy Implications

7.1. Enhancing the Legal and Regulatory Framework

The analysis reveals that the lack of regulatory clarity for emerging technologies is a major barrier. To address this, it is recommended that Algeria create a dedicated regulatory sandbox for AI and Blockchain startups, similar to those identified by the World Bank (World Bank, 2024).

This would allow high-growth ventures to test innovative solutions in a controlled environment without facing legal ambiguity or bureaucratic delays (U.S. Dept. of Commerce, 2024). This sandbox could focus on specific, high-impact sectors like fintech and logistics, providing a safe space for regulatory learning-by-doing and helping to build trust with startups.

7.2. Fostering a Robust Funding Environment

The state-centric nature of Algeria's venture capital landscape is a core challenge that risks crowding out private investment (Zakaria et al., 2025).

To foster a more robust funding environment, policymakers should consider adopting a specific venture capital law to provide a clear legal framework for private funds, drawing on models like Egypt's FRA-68-2022 (Zakaria et al., 2025).

Additionally, the government could introduce tax incentives or co-investment schemes that attract and de-risk private capital, encouraging a more diverse range of investors. There is also a need to promote alternative financing mechanisms that do not rely on traditional collateral, which startups often lack (Khalfallah & Bendjelloul, 2023).

7.3. Strengthening the Technological and Human Capital Foundations

While mobile internet penetration is high in Algeria, the quality of fixed broadband access remains a challenge compared to global standards (U.S. Dept. of Commerce, 2024; DataReportal, 2025). To support data-intensive AI and Blockchain operations, a targeted strategy to improve fixed internet infrastructure and reduce costs should be a priority (U.S. Dept. of Commerce, 2024).

On the human capital front, the government's training initiatives should be expanded to focus specifically on AI, Blockchain, and data science skills. These programs should be designed to build a talent pipeline that can support high-value-added sectors and equip the workforce with the necessary competencies to drive the digital economy.

8. Conclusion and Future Research Directions

8.1. Synthesis of Findings

Algeria's digital transformation is a work in progress, characterized by a clear strategic vision but constrained by significant institutional and systemic hurdles. The strategic intent, outlined in the SNTN-2030, is strong and demonstrates a conceptual alignment with the core value propositions of AI and Blockchain (High Commission for Digitalization, 2024).

Flagship successes like Yassir also serve as powerful examples of how technology can be leveraged to build scalable businesses that address local market needs (Abramundi, 2023; Yassir, n.d.). However, the analysis reveals a significant gap between this strategic vision and the institutional reality on the ground.

The ecosystem is constrained by a state-centric funding model that crowds out private investment, a legal framework that is slow to adapt to emerging technologies, and a critical disconnect between policy declaration and its practical enforcement (Zakaria et al., 2025).

The full promise of AI and Blockchain can only be realized by moving beyond a top-down, state-driven approach to one that fosters a more decentralized, agile, and transparent environment.

8.2. Future Outlook

The trajectory of Algeria's digital economy hinges on its ability to bridge this gap. Future academic inquiry should focus on a deeper analysis of the long-term impact of the SNTN-2030, a granular study of how blockchain could be used to combat specific forms of corruption or bureaucracy in public administration, or an investigation into the role of public-private partnerships in scaling AI and Blockchain solutions in key sectors. The continued evolution of the ecosystem will serve as a vital case study for other resource-dependent economies seeking to diversify and integrate into the global digital landscape.

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