Research article

THE DEVELOPMENT OF ALGERIA'S ICT NFRASTRUCTURE IN THE CONTEXT OF DIGITAL TRANSFORMATION

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Abstract. The development of the information and communication technology (ICT) industry, which is at the core of the digital economy, is of particular importance in Algeria in light of the global transition to so-called Industrialization 4.0 and the plans of the Algerian leadership to make Algeria, which currently ranks third in Africa in terms of economy, a regional leader in digital transformation. In August 2024, the Algerian parliament approved the concept of "Digital Algeria 2030," whereby significant state funding was allocated for the implementation of ICT infrastructure projects. The purpose of this paper is to assess the state of the ICT infrastructure in Algeria and the degree of its readiness to implement the national concept of digital transformation. In the course of the research, the strategy "Digital Algeria 2030," published in May 2025, was examined, international rating data was critically summarized, and a comparative characterization of Algeria's ICT sector in the regional context was provided. The qualitative characteristics of the ICT market in Algeria, its peculiarities and structure were also analyzed. The conclusion made by the author is that in recent years, Algeria has demonstrated relative progress in developing its ICT infrastructure and is fundamentally ready, in a year or two, to accomplish a quantum leap in the field of technology (to implement widely complex AI technologies, cloud computing, and Big Data). The paper also identifies promising areas of Russian cooperation with Algeria in the field of ICT. These include specialized personnel training, financial digital technologies, smart city and e-government concepts, automation of agriculture and industry using AI, development and transfer of software and equipment (data centers, servers, infrastructure for 5G networks). The active policy of the Algerian government in the ICT sector allows for potential economic dividends from digital transformation in the future and an expected increase in the contribution of the ICT sector to the national GDP.

Keywords: ICT, Algeria, digitalization, Fourth Industrial Revolution, Internet, public policy, digital society, digital economy

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In its broadest sense, the term "digital economy" encompasses all economic activity reliant on, or significantly enhanced by, the use of digital inputs, including digital

technologies, digital infrastructure, digital services, and data[1]. In turn, digital transformation, as interpreted by the Organization for Economic Co-operation and Development (OECD), refers to the shift towards information processing and communication by electronic means, a digital economy, and a digital society[2]. Undoubtedly, digital economy transformation is not limited to the development of ICT infrastructure. Assessments of the level of digital transformation take into account elements such as the qualifications of specialists in the ICT field, the size of the e-commerce market, the presence of electronic document management systems, the accessibility and security of online services and databases for citizens, as well as the degree of utilization of social networks, the Internet of Things[3], artificial intelligence (AI), and Big Data, etc. Nevertheless, a transition to a digital economy is unfeasible without a well-developed ICT infrastructure [Tatarinov, Ustinova 2021]. Therefore, in the initial stages of digital transformation, this component experiences the most dynamic development.

The aim of this study is to evaluate the readiness of ICT infrastructure to practically implement the "Digital Algeria 2030" strategy. The methodological foundation includes an interdisciplinary approach, content analysis, comparative analysis, and SWOT analysis[4]. During the research process, the "Digital Algeria 2030" strategy, released to the public in May 2025, was examined, related international ranking data was critically consolidated, and a comparative characterization of Algeria's ICT sector in a regional context was presented. The study also analyzed the qualitative characteristics, formation features, and structure of the ICT market in the republic.

THE ALGERIA DIGITAL 2030 STRATEGY

Plans for the digital transformation of Algeria's economy have been under development since the early 2000s [Zakaria, Benchohra 2024: 16]; however, this process accelerated following the inauguration of President Abdelmadjid Tebboune in 2019[5]. In August 2024, "The National Strategy for Digital Transformation: For A Digital Algeria 2030"[6], was approved by the Algerian Parliament. The strategy notably emphasizes Algeria's ambition to become "an [African] continental leader in digital transformation". The document outlines 25 key objectives to be achieved between 2025 and 2030,

[1] A Roadmap Toward a Common Framework for Measuring the Digital Economy: Report for the G20 Digital Economy Task Force. *OECD*, 2020. P. 34. https://www.itu.int/en/ITU-D/Statistics/Documents/publications/OECDRoadmapDigitalEconomy2020.pdf (accessed: 07.03.2025)

[2] Ibid. P. 36–45.

[3] The Internet of Things (IoT) is a concept of a data transmission network between physical objects ("things") equipped with built-in tools and technologies to interact with each other or with the external environment. It is assumed that the organization of such networks can transform economic and social processes and eliminate the need for human involvement in some actions and operations.

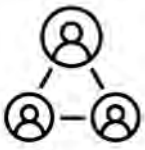
[4] SWOT analysis is a method for assessing internal and external factors that influence a company, project, or idea. The goal is to identify strengths and weaknesses, as well as opportunities and threats for the development of the subject.

[5] The coronavirus pandemic has acted as an accelerator for the digitalization process. The first digital transformation strategy, "Electronic Algeria 2013", adopted in 2008, did not achieve its objectives on time. It was then extended until 2018, but this also did not lead to the realization of digitalization and digital economy transformation. [Sari, Aouaidjia 2024: 2827], [Khalfallah, Bendjelloul 2023: 782]. This necessitated a revision of the strategy, resulting in the development of the "Digital Algeria 2030" strategy.

[6] Stratégie Nationale de la Transformation Numérique en Algérie. Pour une Algérie Numérique 2030. *Haut-Commissaire à la Numérisation.* Algérie, 2024. Published on May 13, 2025. https://hcn.dz/SNTN-Fr.pdf (accessed: 20.05.2025)

distributed across five sections. The first two, “Basic ICT Infrastructure” and “Human Capital & Training,” are recognized as the “essential” pillars for establishing a digital economy, while the remaining three—“Digital Governance,” “Digital Economy,” and “Digital Society”—are framed as ultimate goals. The section “Digital Economy” is the most comprehensive, comprising eight objectives. Slightly less detailed are the sections “Basic ICT Infrastructure” and “Digital Governance,” each encompassing six objectives. The “Human Capital & Training” (two objectives) and “Digital Society” (three objectives) sections appear more abstract in their wording (see *Table* 1).

Table 1. **“Digital Algeria” Strategy Map**

Digital Society 	1. Equitable and inclusive access to ICT services and technologies for citizens 2. Citizens’ participation in public life and decision-making processes through digital space 3. Promoting national digital content that reflects Algeria’s identity and cultural values
Digital Economy 	1. Minimize cash transactions 2. 80% of small and medium-sized enterprises utilize digital systems 3. The contribution of ICT sector to Algeria’s GDP no less than 20% by 2030 4. 100,000 Algerian companies operating in ICT domain 5. Entry of 50 Algerian ICT leaders into the global market 6. Exports of ICT products and services 7. Attracting $1 billion in foreign investment to the ICT sector 8. Host 10 international ICT leaders
Digital Governance 	1. 100% public services digitized 2. 100% administrative operating digitized 3. Reducing departure of professionals involved in digitalization projects 4. Digital identification for individuals and legal entities 5. “Interoperability” among the public sector, private sector, and civil society 6. Development of the framework for data governance
Human Capital & Training 1. 500,000 local ICT specialists 2. Reducing ICT skills departure abroad by 40% 	**Basic ICT Infrastructure** 1. 100% Internet access for households 2. 100% of public institutions and enterprises with high-speed connectivity 3. Extending the fiber-optic Internet network to sub-Saharan African countries optimizing profitability 4. Over 5 national data centers 5. Exported cloud services 6. 500,000 (.dz) domain names 

Source: Copmiled by the author on the base of: Stratégie Nationale de la Transformation Numérique en Algérie. Pour une Algerie numerique 2030. *Haut-Commissaire à la Numérisation.* Algérie, 2024. https://hcn.dz/SNTN-Fr.pdf (accessed: 20.05.2025)

According to the strategy document, the establishment of core ICT infrastructure entails achieving access to the Internet for 100% of households and organizations, ensuring high-quality connectivity between institutions, extending the fiber-optic Internet

network to sub-Saharan African countries to facilitate the export of cloud services via viable investments, creating over five national data processing centers aligned with international standards, transitioning to exporting cloud services, and increasing the number of second-level domain names[7] (.dz) to 500,000.

The section on human capital succinctly identifies two primary objectives: increasing the number of local ICT specialists to 500,000 and reducing their departure abroad by 40%.

The transition to digital governance is identified in the strategy as a 100% shift to a digital format for government services and administrative procedures. This will be achieved through the implementation of digital identification for individuals and legal entities, the establishment of efficient interconnectivity among the public sector, private sector, and civil society, as well as the creation of regulatory frameworks for data management. The strategy also emphasizes the integration of advanced technologies such as artificial intelligence (AI) and the Internet of Things (IoT) into governance practices. Furthermore, the section "Digital Governance" includes measures to maintain the number of ICT specialists in the public sector by offering incentives and reducing their outflow by 20%.

According to the strategy, the development of a digital economy in Algeria will require minimizing cash transactions, integrating ICT systems into the internal management of small and medium-sized enterprises (SMEs), and increasing the number of Algerian ICT companies to 100,000. Additionally, the strategy envisions the entry of 50 Algerian ICT corporations into the global market and attracting to the country 10 leading international digital companies. The "Digital Economy" section also outlines the goal of attracting $1 billion in foreign investment to the ICT sector. It is projected that by 2030, the ICT sector will contribute no less than 20% to Algeria's GDP.

The section on "Digital Society" includes important objectives aimed at ensuring comprehensive access to ICT services and technologies for citizens, fostering their digital participation in public life and decision-making processes, and promoting digital content that reflects Algeria's national identity and cultural values.

At the same time, in December 2024, a Strategy for the Development of Artificial Intelligence[8] was adopted. It aims to create local AI projects and integrate them into various fields to reduce reliance on imported technologies. Its key provisions include encouraging AI research, establishing infrastructure such as high-performance data centers and cloud storage optimized for AI, forming partnerships with universities and research centers specializing in AI, enhancing local government capabilities in this field, and supporting relevant startups. It is projected that by 2027, the AI industry will account for 7% of Algeria's GDP[9].

[7] *Second Level Domain (SLD*) is a part of a domain name that is located in front of the top-level domain and is separated from it by a dot. For example, in the address of *www.sonatrach.dz* (Algeria's largest oil and gas company, *Sonatrach*), the second-level domain is "*sonatrach"* and "*.dz*" is the country-code top-level domain (ccTLD) for Algeria. The increase in the number of second-level domains is aimed at strengthening the national presence in the Internet space.

[8] 3e Conférence africaine des start-up: l'Algérie adopte une stratégie nationale de l'intelligence artificielle. *Radio Algérienne.* 08.12.2024. https://news.radioalgerie.dz/fr/node/56441 (accessed: 30.04.2025) The strategy was not released to public at the time of publication of this article.

[9] Intelligence artificielle : un objectif de contribution de 7% au PIB de l'Algérie d'ici 2027. *Algérie Presse Service*. 17. 02. 2025. https://www.aps.dz/sante-science-technologie/183125-intelligence-artificielle-un-objectif-de-contribution-de-7-au-pib-de-l-algerie-d-ici-2027 (accessed: 03.06.2025)

Regarding financial allocations for the ICT sector, between 2015 and 2019, $22 billion worth of related equipment was imported[10]. Between 2010 and 2019, the government invested over $3.7 billion in ICT infrastructure development[11]. In 2021, under the Algeria Startup Fund established a year earlier, leaders of 390 technological projects managed to attract $4 million[12], and for the 2025–2029 period, the projected figure is significantly higher: as much as $600 million ($150 million annually)[13]. In the 2025 budget, approximately $520 million (64 billion dinars, 0.4% of the budget) has been allocated to the ICT sector for telecommunications, scientific research, technological development, knowledge economy creation, and startup support[14]. A list of 500 ICT projects approved in January 2025 and slated for implementation within two years primarily consists of basic ICT infrastructure projects[15].

Thus, after the adoption of the national digital strategy in 2024, the process of digital transformation in Algeria gained significant momentum[16]. According to the state program, to achieve the ultimate goals of creating a digital economy, a digital society, exporting ICT services, and establishing Algeria as a regional technological hub, the republic needs to complete the foundational stages of digitalization [Gribanov 2019: 12][17] in a short timeframe. The objectives of these stages are outlined in the first two sections of the "Digital Algeria 2030" strategy: "Basic ICT Infrastructure" and "Human Capital & Training". Currently, government funding is focused on infrastructure projects, software procurement and development, and relevant scientific research.

ALGERIA IN INTERNATIONAL DIGITAL TRANSFORMATION RANKINGS

To evaluate the state of Algeria's ICT sector in comparison with other North African countries, international rankings offer valuable insights. This study highlights three authoritative indices related to the assessment of digital transformation levels: the UN E-Government Development Index, the Global Innovation Index, and the Network Readiness Index.

According to the UN E-Government Development Index (*EGDI*), which integrates data from the International Telecommunication Union, UNESCO, and the United Nations Department of Economic and Social Affairs, Algeria was ranked closer to the bottom in

[10] Algeria's Evolving Telecom Landscape. *Telecom Review Africa.* 06.03.2023. https://telecomreview africa.com/articles/features/3269-algeria-s-evolving-telecom-landscape/ (accessed: 05.04.2025).
[11] Ibid.
[12] Country Report. Algeria. Digital Wellbeing Index 2024. *ITHRA*, 2024. https://dwi-api.ithra.com/uploads/ Algeria_country_profile_bdb6c09692.pdf (accessed: 28.02.2025)
[13] L'Algérie investit 600 millions de dollars pour faire émerger mille start-ups d'ici 2029. *Maghreb Emergen*t. 01.06.2025. https://maghrebemergent.news/fr/lalgerie-investit-600-millions-de-dollars-pour-faire-emerger-mille-start-ups-dici-2029/ (accessed: 15.06.2025)
[14] Calculated by the author based on: Loi n° 24–08 du 22 Joumada El Oula 1446 correspondant au 24 novembre 2024 portant loi de finances pour 2025. *Le Journal Officiel de la République Algérienne*, No. 84, 26.12.2024.
[15] Njoya S. L'Algérie prévoit plus de 500 projets numériques d'ici 2026. *WeAreTech.* 26.12.2024. https://www.wearetech.africa/fr/fils/actualites/tech/l-algerie-prevoit-plus-de-500-projets-numeriques-d-ici-2026 (accessed: 25. 02.2025)
[16] It is planned to accelerate the implementation of the goals set back in the "Electronic Algeria 2013" program, partially repeated in the "Digital Algeria 2030" strategy, but not realized over the course of a previous decade.
[17] The digital transformation is conventionally divided into four stages: digital data stage, digital infrastructure stage, digital models' stage, and the digital economy stage [Gribanov 2019: 12]. Algeria is simultaneously overcoming the first two stages.

2024, occupying the 116th position out of 135 countries[18]. It lagged behind all other North African nations except Libya. Algeria's *EGDI* score of 0.5956 was below the global average (0.6382) but above the African continental average (0.4054). The country was surpassed both by the continent's leader, South Africa (0.8616), and the North African leader, Tunisia (0.6935). Some components of the index revealed a stark imbalance: while Algeria matched global standards in ICT infrastructure, it significantly lagged behind other North African and African nations in the provision of all kinds of internet services.

In the Global Innovation Index (*GII*) ranking, which included 133 countries, Algeria was ranked 115th in 2024. This position illustrates a significant gap when compared to Morocco (66th), Tunisia (81st), Egypt (86th), and other African nations (such as South Africa, Botswana, Cabo Verde, Senegal, Nigeria, etc.)[19]. However, the index highlighted Algeria's substantial investments in the education sector (10th globally), an excellent level of knowledge among STEM[20] graduates (20th place), and an increase in the number of patents registered with local patent offices for inventions compared to previous years (65th place in 2024, see *Fig.* 1).

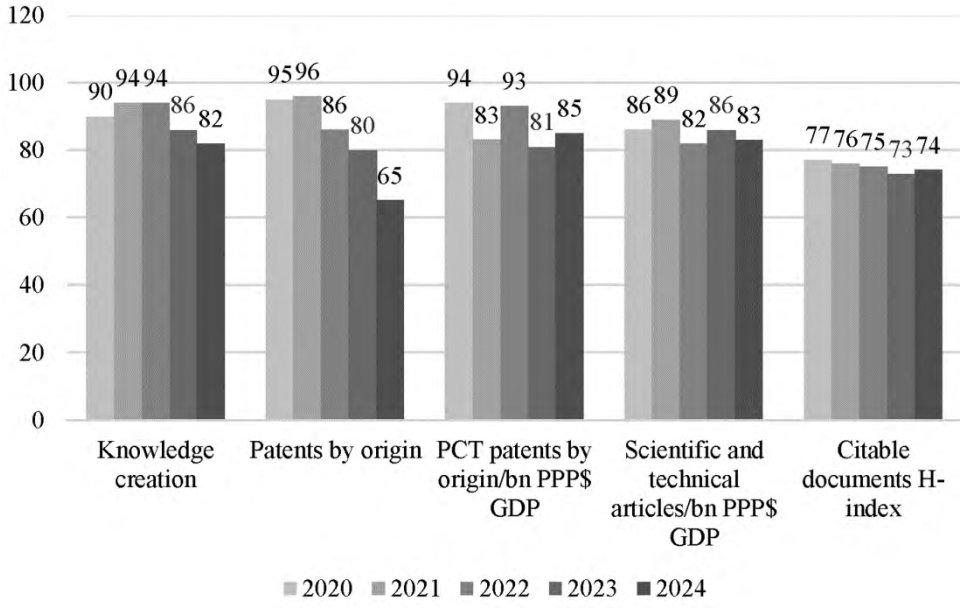


Fig. 1. **Algeria's position in the Global Innovation Index for the indicator "6.1. Knowledge creation" and its sub-indices, 2020–2024.**

Source: Global Innovation Index 2020: Who Will Finance Innovation? *Cornell University, INSEAD, World Intellectual Property Organization*. 2020. P. 216; Global Innovation Index 2021: Tracking Innovation through the COVID-19 Crisis. *World Intellectual Property Organization*. 2021. P. 43; Global Innovation Index 2022: What is the future of innovation-driven growth? *World Intellectual Property Organization*. 2022. P. 93; Global Innovation Index 2023: Innovation in the face of uncertainty. *World Intellectual Property Organization*. 2023. P. 81; Global Innovation Index 2024: Unlocking the Promise of Social Entrepreneurship. *World Intellectual Property Organization*. 2024. P. 117.

[18] E-Government Survey 2024 Accelerating Digital Transformation for Sustainable Development. With the addendum on Artificial Intelligence. *United Nations*. 2024. P. 96. https://desapublications.un.org/sites/default/files/publications/2024-09/(Web%20version)%20E-Government%20Survey%202024%201392024.pdf (accessed: 23.02.2025)

[19] Global Innovation Index 2024: Unlocking the Promise of Social Entrepreneurship. *World Intellectual Property Organization*. 2024. P. 117. The data on Libya is not available in the index.

[20] STEM is an umbrella term that groups: Science; Technology; Engineering; Mathematics.

In the Network Readiness Index (*NRI*), deemed one of the most informative aggregate indicators of ICT development, Algeria ranked 100th in 2024 (two positions lower than its rank in 2019)[21]. The index assessed 133 countries, including the impact of digital transformation on economic development and citizen welfare. According to the *NRI*, Algeria's profile in terms of the people pillar (the application of ICT across three facets: individuals, enterprises, and public sectors) and the technology pillar (access to ICT infrastructure, content, and future technologies) approached normative indicators for countries with high middle-income levels. However, in terms of the governance pillar (trust, regulation, inclusion) and the impact pillar (economic repercussions, quality of life, the Sustainable Development Goals contribution), Algeria demonstrated a regression compared to its 2019 ratings[22] (see *Fig.* 2).

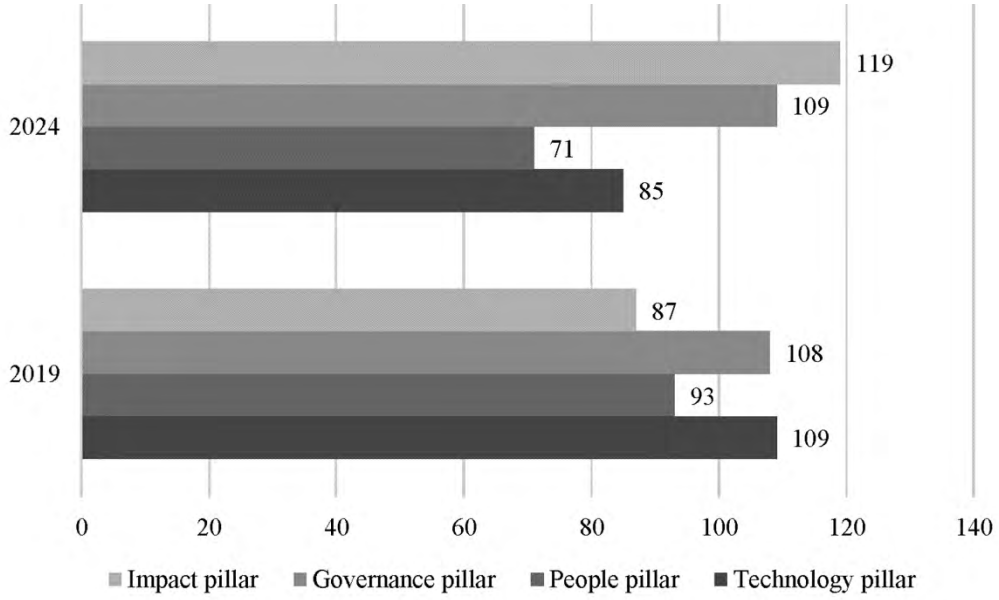


Fig. 2. **Algeria's position according to the main pillars of the Network Readiness Index, 2019 and 2024.**
Source: Network Readiness Index 2024. Building a Digital Tomorrow: Public-Private Partnerships for Digital Readiness. *Portulans Institute, Oxford University Press, Saïd Business School*. 2024. P. 85; The Network Readiness Index 2019: Towards a Future-Ready Society. *Portulans Institute*. 2019. P. 51.

Nevertheless, the "sub-pillars" of the last two indicators reveal that Algeria ranked 3rd in bridging the urban-rural divide in digital payments, 33rd in prevalence of the gig economy, and excelled in working on legislative frameworks for e-commerce.

These positive factors highlighted by the ranking have a contradictory basis. Regulatory acts in the field of e-commerce were adequately present in all North African countries except Tunisia, according to the ranking. However, their actual content was not assessed.

The accessibility of digital payments in Algeria was mainly guaranteed by postal transfer services [Cherki, Seffih 2023: 136] rather than by the use of electronic payment terminals or online platforms. In 2022, approximately 13 million plastic cards [Amrane,

[21] Network Readiness Index 2024. Building a Digital Tomorrow: Public-Private Partnerships for Digital Readiness. *Portulans Institute, Oxford University Press, Saïd Business School*. 2024. P. 85; The Network Readiness Index 2019: Towards a Future-Ready Society. *Portulans Institute*. 2019. P. 51.
[22] Ibid.

Damene 2023: 220] were in circulation, connected to electronic payment services through online applications and marketplaces. In other words, the number of Algerians with bank accounts ready to make online payments was not especially high. Moreover, unlike countries where money transfers via mobile wallets (which do not require having a bank account) are primarily facilitated by telecommunications operators [Novikova 2019: 86–87], in Algeria, banks held the leading position.

Table 2. **Key Indicators of North African Countries Related to ICT Sector Development, 2024**

Country/Indicator	Algeria	Egypt	Libya	Morocco	Tunisia
Population, million people	46.2	**114.5***	N/A	37.7	12.2
GDP, $ million	629	**1809**.4	N/A	385.3	162.1
GDP per capita, $ PPP	13.682	**17.123**	N/A	10.408	13.249
ICT contribution to GDP, %	4.7	5.8	1.7	1.5	**11**
EGDI Index	0.5956	0.6699	0.5466	0.6841	0.**6935**
ICT Infrastructure Index	0.8129	0.6946	**0.9639**	0.8827	0.8357
Human Capital Index	0.6418	0.6150	0.5951	0.6078	**0.6497**
Online Services Index	0.3320	**0.7002**	0.0808	0.5618	0.5951
GII ranking	115	86	N/A	**66**	81
ICT Usage Index	75.4	67.7	N/A	**77.1**	75.9
Government Online Services Index	30.8	52.8	N/A	41.7	**56.1**
E-Participation Index	20.9	33.7	N/A	25.6	**53.5**
ICT Services Export, %	0.2	2.0	N/A	**3.2**	1.7
ICT Services Import, %	0.3	**0.9**	N/A	**0.9**	0.6
Technical Profile Graduates, %	29.9	16.9	N/A	27.2	**37.9**
NRI Index	39.24	44.42	N/A	**45.93**	41.56
Fixed Internet Connection Index	35.74	**46.92**	N/A	36.86	26.32
International Internet Bandwidth Index	76.86	**82.86**	N/A	79.74	72.43
Online Commerce Index	8.78	2.62	N/A	10.50	**18.86**
Cybersecurity Index	33.92	**95.50**	N/A	82.42	86.25
Gender Digital Gap	31.53	39.36	N/A	**63.34**	42.99

* The highest/best indicators in the considered group of countries are highlighted in bold to visualize the leader.

Compiled by the author based on: E-Government Survey 2024 Accelerating Digital Transformation for Sustainable Development. With the addendum on Artificial Intelligence. *UN*. 2024. P. 96; Global Innovation Index 2024: Unlocking the Promise of Social Entrepreneurship. *World Intellectual Property Organization*. 2024. P. 117. 153. 195. 236; Network Readiness Index 2024. Building a Digital Tomorrow: Public-Private Partnerships for Digital Readiness. *Portulans Institute. Oxford University Press. Saïd Business School*. 2024. P. 85. 120. 165. 203.

A high share of part-time and freelance employment, which is the basis of the gig economy[23], could also be explained by the noticeable role of the informal economy and violations of labor laws. Problematic points noted directly by the ranking included

[23] The gig economy is a labor market model in which work is performed through short-term contracts, assignments, or projects rather than on a permanent basis. Workers (gig workers) choose when, how much, and for whom to work, while companies receive a flexible resource without hiring full-time employees.

relatively low spending on software imports, lack of online access to financial accounts, imperfect ICT regulation tools, a digital gender gap, weak economic opportunities for women, small volumes of ICT service exports, and low freedom of life choice (ranked 130th globally)[24].

Drawing upon the data from international indices. it is evident that Algeria. at the point of adopting its National Digital Transformation Strategy. possessed the minimum necessary conditions for the development of its ICT sector. These included. most notably. telecommunications infrastructure. a well-trained pool of technical specialists. and the capacity to sustain relatively high budgetary expenditure on education and science. However. none of the cited 2024 indices positioned Algeria as a regional leader in the ICT domain. Algeria lagged behind other North African countries in key metrics such as the e-participation index. government online services. ICT service exports. cybersecurity. and digital gender parity (see *Table* 2). In terms of a crucial metric for becoming a future regional technological hub. namely international Internet bandwidth. Algeria was surpassed by Egypt and Morocco. The findings from these indices confirm the fact that Algeria was in the initial basic stages of digital transformation [Gribanov 2019: 12]. whereas neighboring countries had progressed further. For a comprehensive understanding of the developmental trends within Algeria's ICT sector. its priorities. and its outlook. a qualitative analysis of elements within its ICT infrastructure is essential.

MOBILE TELEPHONY IN ALGERIA

The advent of the Internet is widely considered to have been a catalyst for digital transformation globally. as it fostered the creation of industrial clusters around major urban centers and reshaped market structures. However. in Africa. it was the proliferation of mobile telephony that played the most significant role as a driver of such transformations [Williams et al.. 2011: 26]. Since the 1990s. mobile phones—and subsequently. mobile Internet—have become indispensable tools for communication. information access. and economic growth across the continent [Adam. 2019: 240].

In Algeria. the mobile telephony boom commenced in the early 2000s [Loucif. 2023: 236]. In 2002. only 450.000 Algerians (representing 1.4% of the population) utilized mobile services. but this figure surged to 4.8 million (15% of the population) by 2004[25]. marking a tenfold increase in absolute terms within a few years. By 2010. mobile coverage extended to 90% of the population. amounting to 35.6 million users[26]. Following the transition to 3G standards in 2013. the number of mobile subscribers began to exceed the total population. suggesting the prevalence of multiple SIM cards issued by different carriers per individual[27].

[24] Network Readiness Index 2024. Building a Digital Tomorrow: Public-Private Partnerships for Digital Readiness. *Portulans Institute, Oxford University Press, Saïd Business School*. 2024. P. 85; The Network Readiness Index 2019: Towards a Future-Ready Society. *Portulans Institute*. 2019. P. 51.

[25] L'Algérie en Quelques Chiffres. Résultats 2005. Algérie: *Office national des statistiques*. N°36. 2006. P. 44.

[26] L'Algérie en Quelques Chiffres. Résultats 2009-2011. Algérie: *Office national des statistiques*. N°42. 2012. P. 52

[27] L'Algérie en Quelques Chiffres. Résultats 2012-2014. Algérie: *Office national des statistiques*. N°45. 2015. P. 56.

The Algerian mobile market is characterized by competition among the three major operators: *Mobilis*. *Djezzy*. and *Ooredoo Algeria*. *Mobilis*. which controls 44%[28] of the market. and *Djezzy* (31%) are state-affiliated entities[29]. while *Ooredoo Algeria* (25%) is a subsidiary of the Qatari multinational corporation *Ooredoo Q.P.S.C*. *Mobilis* is the most popular operator. largely owing to its affordable tariffs. which cater to subscribers in both urban and rural areas. Conversely. while the services of *Djezzy* and *Ooredoo* are more expensive. they are perceived as offering superior quality. *Djezzy* seeks to expand its subscriber base by actively investing in innovation and providing cloud services and IT solutions targeted at businesses. Meanwhile. *Ooredoo* attracts a younger audience by offering high-speed Internet suitable for gaming applications and video sharing[30].

Although button mobile phones remain in use across Africa (accounting for up to 46% of subscribers)[31]. Algeria demonstrates a markedly different trend. with only 5% of mobile users relying on GSM connections without 3G/4G support[32]. This figure was significantly higher. at 19%. five years ago[33]. Consequently. a substantial proportion of Algerians now own smartphones. with Samsung and Xiaomi emerging as market leaders in Algeria. Among active subscribers. an overwhelming majority—94.5%[34]—use their phones primarily to access the Internet. implying universal digital engagement among all but button-phone users.

According to data provided by Algeria's Ministry of Post and Telecommunications. the number of active mobile connections exceeded 54 million in 2024[35]. representing 113% of the population. The proliferation of mobile telecommunications in Algeria is regarded as an indicator of economic growth. with a 10% increase in mobile subscribers correlating to an average economic growth rate of 0.8% [Choutri. Bounihi 2023: 420].

Calculations carried out a few years ago at the continental level demonstrated that the mobile industry contributed $56 billion to the African economy. accounting for 3.5% of the region's total GDP [Usacheva. 2014: 148]. To advance its telecommunications infrastructure. Algeria aims to implement 5G networks by the end of 2025[36]. Initially. fifth-generation mobile networks will be established in densely populated and industrial zones. However. this development is contingent upon the availability of high-capacity fiber-optic infrastructure. Does Algeria possess the requisite Internet network to support such advancements?

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[28] Algérie: le parc d'abonnés de Djezzy a augmenté de 6,2% à 17 millions d'abonnés en un an. *L'Agence Ecofin.* 06.05.2025. https://www.agenceecofin.com/actualites-numerique/0605-128135-algerie-le-parc-d-abonnes-de-djezzy-a-augmente-de-6-2-a-17-millions-d-abonnes-en-un-an (accessed: 07.06.2025)

[29] *Mobilis* belongs to *Algérie Télécom*, while *Djezzy* belonged previously to an Egyptian operator before it was in 2022 transferred into the ownership of National Investment Fund of Algeria (*Fonds National d'Investissement*).

[30] Algeria. Mobile Network Experience Report. *Opensignal*. 2025, April. https://www.opensignal.com/reports/2025/04/algeria/mobile-network-experience

[31] African smartphone market poised for 4% growth in 2024, despite economic instability. *Canalys*. 12.06.2024. https://www.canalys.com/newsroom/african-smartphone-market-q1-2024 (accessed: 07.06.2025)

[32] Observatoire du marché de la téléphonie mobile du 4ème trimestre 2024. *L'Autorité de Régulation de la Poste et des Communications Electroniques*. Algérie, 2024. P.5.

[33] Observatoire du marché de la téléphonie mobile en Algérie 4éme trimestre 2019. *L'Autorité de Régulation de la Poste et des Communications Electroniques*. Algerie, 2019. P.3.

[34] Improving the Quality of Mobile Telephony Services. *Ministry of Post and Telecommunications.* Algeria, 2025. https://www.mpt.gov.dz/improving-the-quality-of-mobile-telephony-services/ (accessed: 07.04.2025)

[35] Observatoire du marché de la téléphonie mobile du 4ème trimestre 2024. *L'Autorité de Régulation de la Poste et des Communications Electroniques*. Algérie, 2024. P.1.

[36] Algeria: 5G Deployment Planned for Second Half of 2025. *AL24 News.* 14.04.2025. https://al24news.dz/en/algeria-5g-deployment-planned-for-second-half-of-2025/ (accessed: 18.05.2025)

INTERNET INFRASTRUCTURE IN ALGERIA

The introduction of the Internet in Algeria dates back to 1994. yet. until the early 2000s. access was limited primarily to 800 governmental institutions and select private users [Salem. Benmessahel 2021: 114]. By 2006. only 2.6% of Algerians had Internet access [Salem. Benmessahel 2021: 114]. As of 2025. the penetration rate of Internet services in Algeria reached 76.9%[37]. representing 36.2 million individuals. This figure aligns with the average Internet penetration across North African nations (73%) but remains marginally lower than that observed in Western Asia (75.9%)[38]. Nonetheless. approximately 10.9 million Algerians. accounting for 23.1% of the population. remained without Internet connectivity. This discrepancy largely mirrors the country's urbanization rate of 75%[39]. demonstrating a persistent "digital divide" between urban centers and rural regions. Investment in Internet infrastructure has concentrated on Algeria's coastal cities. where urban conglomerations such as Oran. Constantine. Annaba. and the capital. Algiers. boast the fastest Internet speeds[40]. Conversely. achieving connectivity for the last 20–25% of the population residing in remote areas of Algeria—the largest country in Africa by geographical extent—remains challenging. Factors contributing to this include mountainous terrains and southern desert landscapes. as well as the substantial costs associated with technological deployment.

In regions characterized by limited fiber-optic and ADSL network coverage. fixed 4G/LTE connections have played a critical role in bridging the connectivity gap by offering wireless-based home Internet solutions. Alternatively. the Alcomsat-1 satellite. launched in 2017. has provided services such as communications. broadcasting. and broadband Internet. often catering to corporate requirements[41]. Nevertheless. mobile Internet continues to dominate as the preferred mode of connectivity nationwide.

The more widespread adoption of mobile Internet in Algeria. compared to fixed broadband. was largely influenced by its affordability and superior data transmission speeds. Monthly broadband tariffs ranged between €14 and €25 for unlimited access with speeds varying from 20 Mbps to 1 Gbps[42]. The cost of a router amounted to approximately €50 [Loucif 2023: 236]. while the minimum wage stood at only €140[43]. creating significant barriers for fixed Internet users. Moreover. the average download speed for fixed connections remained at a modest rate of 21.09 Mbps[44]. For

[37] Digital 2025: Country Headlines Report. *Datareportal*. 05.02.2025. P. 41. https://datareportal.com/reports/digital-2025-local-country-headlines (accessed: 19.04.2025)

[38] Global internet penetration rate as of February 2025, by region. *Statista*. https://www.statista.com/statistics/269329/penetration-rate-of-the-internet-by-region/ (accessed: 19.04.2025); Digital 2025: Country Headlines Report. *Datareportal*. 05.02.2025. Pp. 25, 30. https://datareportal.com/reports/digital-2025-local-country-headlines (accessed: 19.04.2025)

[39] Digital 2025: Country Headlines Report. *Datareportal*. 05.02.2025. P. 41. https://datareportal.com/reports/digital-2025-local-country-headlines (accessed: 19.04.2025).

[40] Algeria Median Country Speeds Updated April 2025. *Speedtest Global Index*. https://www.speedtest.net/global-index/algeria (accessed: 07.04.2025)

[41] Frąckiewicz M. Internet Access in Algeria. *Digital Divide, Internet Access, Technology*. 30.05.2025. https://ts2.tech/en/internet-access-in-algeria/ (accessed: 07.06.2025)

[42] Kassouwi I.K. High-Speed Networks: Algeria to Phase Out Copper, Switch to Fiber by 2027. *WeAreTech.Africa*. 02.05.2025. https://www.wearetech.africa/en/fils-uk/news/telecom/high-speed-networks-algeria-to-phase-out-copper-switch-to-fiber-by-2027 (accessed: 09.06.2025)

[43] For comparison: the cost of mobile Internet is $0.48 per 1GB [Zakaria, Benchohra 2024: 11].

[44] Algeria Median Country Speeds Updated April 2025. *Speedtest Global Index*. https://www.speedtest.net/global-index/algeria (accessed: 07.06.2025)

comparison. Russia reported an average speed of 88.32 Mbps[45]. although mobile Internet speeds in both Algeria and Russia were comparable at 35.06 Mbps and 36.02 Mbps. respectively[46].

Unlike the mobile telecommunications sector. which is characterized by competition. the Internet service provider market in Algeria operates under a monopoly held by the state-owned corporation *Algérie Télécom*[47]. This entity exerts substantial control over Internet-related infrastructure and tariff policies. presenting certain obstacles to market development. Nonetheless. significant state investments have been directed toward expanding Algeria's fiber-optic networks. Between 2018 and 2024. the country achieved a notable increase in its international Internet bandwidth. growing from 1.5 Tbps to 9.8 Tbps[48]. This expansion was facilitated by the deployment of two major submarine fiber-optic cables: one connecting Marseille (France). Annaba (Algeria). and Abu Talat (Egypt) in 2019. and another linking Algiers and Oran (Algeria) to Valencia (Spain) in 2020.

Additionally. Algeria has engaged in the Trans-Saharan Fiber Optic Backbone project. supported by the African Union under the New Partnership for Africa's Development (*NEPAD*). By July 2024. a 2.600-km segment of the cable connecting Algiers to In Guezzam (on the Niger border) and Tindouf (on the Mauritanian border) had been completed. Ultimately. this network will integrate Algeria with Niger. Nigeria. Chad. Mali. and Mauritania.

Further domestic advancements include the establishment of fiber-optic infrastructure between Adrar and Tindouf in southern Algeria in 2019. By 2024. the total length of fiber-optic lines exceeded 200.000 km[49]. facilitating increased access to fixed broadband Internet services. The number of subscribers rose from 3.7 million in 2020 to 6 million in 2024. representing 27% of households[50]. Among these users. 44% continued to rely on outdated ADSL connections. which are being gradually replaced by high-speed FTTH connections. Consequently. subscriptions to high-speed broadband services experienced rapid growth. increasing from 53.400 in 2020 to 1.7 million in 2024[51]. On a per capita basis. Algeria outperformed Morocco in 2023. boasting 12 subscribers per one hundred people compared to 6–7 subscribers in Morocco[52]. The Algerian government has declared

[45] Russia Median Country Speeds Updated April 2025. *Speedtest Global Index*. https://www.speedtest.net/global-index/russia (accessed: 07.04.2025)

[46] Ibid.

[47] Provides Internet services in the market under the brand *Idoom*.

[48] The equipped capacity of our country's international telecom network reaches 9.8TB/s. *Ministry of Post and Telecommunications.* Algeria. 29.01.2024 https://www.mpt.gov.dz/the-equipped-capacity-of-our-countrys-international-telecom-network-reaches-9-8tb-s/ (accessed: 03.06.2025)

[49] Generalization of optical fiber. *Ministry of Post and Telecommunications.* Algeria. https://www.mpt.gov.dz/major-files/generalization-of-optical-fiber/ (accessed: 01.06.2025)

[50] Improving the Quality of Mobile Telephony Services. *Ministry of Post and Telecommunications.* Algeria. https://www.mpt.gov.dz/improving-the-quality-of-mobile-telephony-services/ (accessed: 07.04.2025)

[51] *Uptime TIER-III* certification is an international standard that confirms the high level of reliability and quality of data center operation. The standard assumes that the data center guarantees nonstop operation of servers and equipment (99.982% uptime), each critical element of the infrastructure has at least one redundant component (N+1 redundancy) and there is the ability to carry out planned maintenance without affecting the ICT environment.

[52] Morocco: Internet subscribers, per 100 people. *The Global Economy.com.* https://theglobaleconomy.com/Morocco/Internet_subscribers_per_100_people/ (accessed: 10.06.2025); Algeria: Internet subscribers, per 100. *The Global Economy.com.* https://www.theglobaleconomy.com/Algeria/Internet_subscribers_per_100_people/ (accessed: 10.06.2025)

its intention to achieve comprehensive broadband coverage nationwide within the next one to two years[53].

DATA CENTERS

The enhancement of high-speed Internet has laid the groundwork for the establishment of data centers (DCs). which are essential for storing. processing. and safeguarding information. as well as supporting cloud services and platforms. In 2022. Algeria's largest national oil and gas company. *Sonatrach*. inaugurated the country's first DC certified under the *Uptime TIER-III*[54] standard[55]. Similarly. the first National Data Processing Center in Constantine was completed in February 2023 in collaboration with the Chinese company *Huawei*. which has been involved in numerous projects across Africa [Deych. Tsvetkova. Kravtsov. 2022: 12]. This facility. currently the largest in Algeria. was followed by the second National Data Processing Center in Blida.[56] the construction of which is almost finished. Other significant developments include the establishment of a data center for the People's National Assembly in Algiers in 2024 and a data center in Oran in 2025. designed specifically for AI applications. The latter forms part of the national program for AI development and seeks to promote technological independence. support startups. and foster research institutions.

To create a comprehensive data center architecture. the network of national data centers must. in time. be supplemented by a system of regional and smaller local data centers. Currently. a limited number of regional DCs exist. varying in scale and function. that are primarily located in coastal urban areas such as Algiers. Oran. and Cheraga. These facilities cater to local hosting companies but are not yet integrated into a cohesive network. The data center market in Algeria is in a dynamic phase. with projected revenues expected to reach $426 million in 2025 and $519 million by 2029[57].

Thus. the establishment of centralized data centers in Algeria represents a critical phase in the development of ICT infrastructure required for digital transformation. In its present state. this infrastructure enables shifts towards e-governance and inter-agency integration (e.g.. transitioning public services to online platforms. synchronizing government services. and adopting cloud computing). It also facilitates technological advancement in areas such as complex digital financial operations. AI. and the IoT.

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[53] Algeria Telecom launches online survey to identify FTTH gaps. *Developing Telecoms*. 29.05.2025. https://developingtelecoms.com/telecom-technology/optical-fixed-networks/18546-algeria-telecom-launches-online-survey-to-identify-ftth-gaps.html (accessed: 03.06.2025)

[54] *Uptime TIER-III* certification is an international standard that confirms the high level of reliability and quality of data center operation. The standard assumes that the data center guarantees nonstop operation of servers and equipment (99.982% uptime), each critical element of the infrastructure has at least one redundant component (N+1 redundancy) and there is the ability to carry out planned maintenance without affecting the ICT environment.

[55] Sonatrach's Datacenter receives ''Uptime Tier 3 design'' certification. *Algeria Press Service*. 02.10.2022. https://www.aps.dz/en/economy/45149-sonatrach-s-datacenter-receives-uptime-tier-3-design-certification (accessed: 04.04.2025)

[56] Coup d'envoi de l'installation du deuxième Centre national des données à Blida. *Algérie Eco*. 07.03.2025. https://algerie-eco.com/2025/03/07/coup-denvoi-de-linstallation-du-deuxieme-centre-national-des-donnees-a-blida/ (accessed: 15.04.2025)

[57] Data Center – Algeria. *Statista*. https://www.statista.com/outlook/tmo/data-center/algeria (accessed: 15.04.2025)

THE STRUCTURE OF THE ICT SERVICES MARKET

Statistics regarding the structure of the ICT industry in Algeria are not readily available in the official Algerian sources. The sector encompasses more than one thousand companies. approximately three hundred of which are directly engaged in the production of software or the provision of ICT services[58]. Prominent entities within this domain include Engisoft. Cetelex. ARES Algérie. and Arcan-networks. According to the Russian trade mission in Algeria. the country's ICT market is valued at approximately $2.9 billion. with services constituting the majority (52%) of the sector[59]. This predominance is linked to restrictive trade policies and challenges in software importation. which necessitate complex licensing processes. Software development (primarily startups and small businesses) accounts for 17% of the market. while AI represents 11%. cybersecurity 6%. IoT 2%. and other segments 12%.

Ongoing ICT projects in Algeria span various domains. including government services. healthcare. education. finance. industrial sectors. and transportation. For instance. biometric ID cards (*CNIBE. La carte Nationale d'identité Biométrique Electronique*) have been implemented since 2015. and electronic signature technology is utilized in official documentation processes. In 2022. the government launched an electronic public services portal[60]. and by January 2025. the Information Resource Infrastructure and Electronic Network (*Réseau Souverain d'Échange d'Informations de l'État*) project was completed to facilitate secure inter-agency data exchange. Starting in 2024. Algerian citizens gained access to remote electronic medical records via the state-operated online platform and mobile application "E-Chifa". The COVID-19 pandemic accelerated the incorporation of ICT technologies within the education system. with 340.000 Algerian applicants submitting university applications through an experimental electronic system during the 2021/2022 academic year [Loucif 2023: 233].

E-commerce is also experiencing growth. with notable platforms such as Yasser Market (providing services similar to Yandex in Russia. including taxi services) and Webwins (similar to advertisement services like Russian Avito). By 2023. the total number of such marketplaces was estimated to be around 300 [Choutri. Bounihi 2023: 421]. The government actively promotes electronic payment methods. having established a reduced VAT rate of 9% (down from 19%) on goods and services sold through online platforms in 2019. as well as a 5% tax on e-commerce activities (compared to the 12% tax applied to professional activities) [Hashemi. Bozza 2021: 386]. Despite these efforts. Algerians still prefer cash transactions[61]. Following Tunisia. which became the flagship of the launch of the electronic national currency eDinar based on blockchain[62] technology

[58] ICT Channel in Algeria. *CompuBase*. 2025. https://en.compubase.net/ICT-Channel-in-Algeria_a399.html (accessed: 20.04.2025)

[59] There are no more than 30 companies licensed to import software. A license is usually issued for a specific project, and the processing time can take up to six months. (IT V Algire: Vozmojnosti I Vizovi Dlya Rossiyskih Kompaniy. (IT in Algeria: Opportunities and Challenges for Russian Companies.) Ministry of Industry and Trade of the Russian Federation. January 22, 2025. (In Rus.) https://rutube.ru/video/0743b804fc8f2d905cb73e3182cd39fe/ (accessed: 23.02.2025)

[60] *Portail Gouvernemental des Services Publics de l'Algérie*. https://bawabatic.dz

[61] IT V Algire: Vozmojnosti I Vizovi Dlya Rossiyskih Kompaniy. (IT in Algeria: Opportunities and Challenges for Russian Companies.) Ministry of Industry and Trade of the Russian Federation. January 22, 2025. (In Rus.) https://rutube.ru/video/0743b804fc8f2d905cb73e3182cd39fe/ (accessed: 23.02.2025)

[62] *Blockchain* is a secure method of storing and transferring data that guarantees the integrity of information and the transparency of all operations in the system. It is a decentralized digital ledger consisting of a continuous sequential chain of interconnected blocks, each of which stores information about transactions or other data.

in 2015 [Babenkova 2019: 25]. the Algerian authorities are preparing to introduce the electronic dinar (e-DZD)[63].

Algeria has demonstrated significant progress in the implementation of modern technologies within the oil and gas sector [Tkachenko 2022: 48]. The energy industry has increasingly adopted digital monitoring systems and smart meters for network condition assessments [Loucif 2023: 235]. Registered professional farmers engage in interactive data exchange regarding agricultural market trends through the *Ghorfati* platform [Loucif 2023: 235]. Furthermore. the construction of Algeria's fifth "smart city." Boughezoul. equipped with advanced eco-friendly technologies. is nearing completion[64].

The integration of ICT technologies across various economic sectors highlights Algeria's transition toward an advanced phase of digital transformation[65]. The contribution of ICT to Algeria's GDP was recorded at 2.9% in 2012 [Lahmar. Benzidane 2019: 158]. increasing to 4.7% by 2020. with projections suggesting a rise to 5.5% by 2040 [Kwasi. Cilliers 2020: 30]. Initially. during the early stages of digital transformation. the correlation between Internet coverage in Algeria and GDP growth per capita was relatively weak [Prikhodko. Sherov-Ignatiev 2024: 29]. However. it is anticipated that this correlation will strengthen as digital transition progresses. In Algeria's case. the dividends of digital transformation are expected to result not only in economic diversification but also in a reduced dependency on oil revenue.

SWOT-ANALYSIS

The findings presented in this analysis of Algeria's ICT infrastructure are encapsulated within the SWOT analysis matrix (refer to *Table* 3).

Table 3: **SWOT Analysis of ICT Infrastructure Development in Algeria**

Strengths:	**Weaknesses:**
– A well-thought-out and realistic national digitalization strategy; – Expansion of the network of international fiber-optic cables through Algeria; – High level of Internet penetration and mobile communication; – Presence of high-tech data centers; – Advanced knowledge among STEM graduates; – State financial support for technological startups and research initiatives; – Implementation of ICT solutions in certain sectors of the economy and social life.	– Accelerated digitalization; – Low competitiveness compared to other North African countries; – Uneven Internet coverage and a "digital gap" between urban and rural areas. "gender digital gap" (see *Table 2*); – Low Internet connection speeds; – Insufficient number of data centers; – Shortage of ICT specialists. with a need to prevent their emigration abroad; – Low levels of ICT literacy among the population; – Monopolization of the Internet market; – Complex administrative procedures (e.g.. software registration. ICT company licensing)

[63] Avec la publication de la loi monétaire et bancaire : L'Algérie lance le dinar numérique. *La Patrie news*. 29.06.2023. https://lapatrienews.dz/avec-la-publication-de-la-loi-monetaire-et-bancaire-lalgerie-lance-le-dinar-numerique/ (accessed: 19.05.2025)

[64] Nouvelles villes de Boughezoul et El Ménéa: Regards sur les enjeux et opportunités. *Horizon - Quotidien National D'Information*. 03.02.2024. https://www.horizons.dz/?p=77349 (accessed: 21.02.2025)

[65] According to Yu.I. Gribanov's terminology, the transition to the phase of "digital models" and ultimately to "digital technologies" [Gribanov 2019: 12].

Opportunities:	**Threats:**
– Strengthening international ties and regional stability through cooperation in the ICT sphere; – Integration into the international Internet space. enhancing horizontal regional integration; – Achieving a qualitative technological leap with the growth of the ICT sector's share in GDP; – Improving and optimizing social-economic management through high-tech ICT solutions; – Increasing economic transparency and growth of direct foreign investments; – Facilitating and reducing the timeframe of administrative procedures; – Long-term economic growth driven by skilled ICT personnel and a high proportion of youth among the working-age population; – Diversifying the economy.	– Terrorist threats in the region. risk of escalation into acute phases of regional conflicts (including around Western Sahara [Correale. Boulay 2018]); – Rollback of the digitalization program due to unfavorable conditions in the global hydrocarbon market and a sharp decline in budget revenues; – The probability of social upheavals with increased marginalization [Geoghegan. Lever. McGimpsey 2004: 109]; – Political instability and mass unrest due to forced liberalization amid the digital transition [Dobra 2012]. [Wheeler 2017]; – Widening of the “digital divide” (gender. income-based. and regional disparities); – The substitution effect of labor resources in the digital economy [Acemoglu 2021: 70]. which exacerbate the unemployment problem that. among young people in Algeria. already exceeds 30%[66]; – Cyber threats. spread of fake information. misuse of ICT technologies by fraudsters.

Source: Compiled by the author.

Most of the points outlined in the SWOT analysis have already been addressed. A significant aspect of the analysis involves exploring the potential for international collaboration within Algeria’s ICT sector.

The country hosts a diverse range of international providers of hardware and software. including Oracle. Symantec. SAP. Fortinet. Siemens. Cisco. Huawei. among others. Additionally. the Russian company “AO Kaspersky Lab” has established a presence in Algeria. Notably. the broader African market. including Algeria. hasn’t yet been penetrated by global platforms such as Apple. Amazon. Netflix [Maslov 2023: 126]. presenting ample opportunities for emerging startups. Given Algeria’s recent adoption of digital economic strategies. its market holds considerable promise. Key areas for international collaboration include specialized personnel training. financial digital technologies. smart city and e-government concepts. as well as the automation of agriculture and industry through AI. Furthermore. the transfer of software and hardware—such as high-tech data centers. servers. and infrastructure for fifth generation (5G) broadcasting—represents a critical area of development. Russian enterprises possess significant capabilities to share their expertise in these domains [Ildyakov 2024: 57].

The development of Algeria’s Information and Communication Technology (ICT) infrastructure has reached a foundational level that facilitates a technological leap through the adoption of advanced technologies. cloud computing. digital financial operations. AI. the IoT. etc.

CONCLUSIONS

The development of Algeria’s ICT infrastructure has reached a level that enables the adoption of digital models. the operation of e-government. and interagency integration—

[66] Unemployment, youth total (% of total labor force ages 15–24) (modeled ILO estimate) – Algeria. *World Bank*. https://data.worldbank.org/indicator/SL.UEM.1524.ZS?locations=DZ (accessed: 15.05.2025)

including transitioning public services to online platforms and synchronizing government services. In the future. this foundation will facilitate a technological and economic breakthrough with the implementation of advanced digital technologies. According to the "Digital Algeria 2030" strategy. the ultimate objective entails the establishment of a digital economy and digital society. coupled with the export of ICT services and Algeria's emergence as a regional technological hub.

However. international rankings currently indicate that Algeria has not yet attained a competitive position as a regional leader in the digital sector. A characteristic feature of Algeria's ICT infrastructure remains its concentration in major urban areas. Challenges such as vast geographical distances. governmental monopolies. organizational difficulties in deploying fiber-optic networks. and the relatively low speed of fixed Internet connections contribute to the prevalence of wireless Internet access technologies. Development trends in Algeria's ICT sector showcase expansion in broadband Internet coverage. the rollout of fifth-generation mobile communication technologies (5G). and the construction of high-tech data centers. Positive progress is also evident in the use of ICT technologies in various socio-economic projects. which correlates with a growing contribution of the ICT sector to Algeria's national GDP.

The process of digital transformation should be approached with caution. taking into account both economic factors (such as exacerbation of unemployment issues or the widening of the digital divide. etc.) and political considerations (including the potential for cyberattacks by terrorists. hostile nations. and other threats).

Algeria's progress in ICT development presents opportunities for economic dividends. improving citizens' welfare. and bolstering regional stability and integration through international collaborations in ICT. Notable areas of cooperation with Russia include specialized personnel training. financial digital technologies. smart city concepts. e-government frameworks. agricultural and industrial automation through AI. and the transfer of software and hardware such as data centers. servers. and 5G broadcasting infrastructure.

REFERENCES

Acemoglu D. (2021). *Redesigning AI: Work Democracy and Justice in the Age of Automation*. Boston Review Forum.

Adam H. (2019). The Digital Revolution in Africa: Opportunities and Hurdles. *SSRN Electronic Journal*. *Proceedings of 10th International Conference on Digital Strategies for Organizational Success*. Pp. 239–267. https://doi.org/10.2139/ssrn.3307703

Amrane S.. Damene O. (2023). FinTech Adoption in the Algerian Banking Sector: Reality and Challenges. *Journal of Economic Integration*. Vol. 11. № 5. Pp. 213–227.

Babenkova S.Yu. (2019). Digital Financial Technologies of Middle East Region: Consideration. Analysis. Perspectives. *Eastern Analytics*. № 3. Pp. 18–30. (In Russ.)

Cherki A.. Seffih S. (2023). Taqyiim at-tajriba al-jaza'iriyya fi majal at-tahawwul ar-raqmiy: al-waqia wa at-tahaddiyat. (Evaluating the Algerian Experience in Digital Transformation: Reality and Challenges). *Majallah dirasat fi al-iqtisad wa idara al-a'amal*. (*Journal of Economic and Management Studies*). №06 (02). Pp. 127–147. (In Arabic)

Choutri A.. Bounihi M. (2023). Daur al-istratigiya al-wataniya li al-tahawwul ar-raqmiy fi tahqiq ab'ad at-tanmiya al-mustadama fi l- jaza'ir – ru'ya 2030. (The role of the National Strategy for Digital Transformation in achieving the dimensions of sustainable development in Algeria Vision 2030). *Maaref*. № 18 (1). Pp. 408–424. (In Arabic)

Correale F.. Boulay S. (Eds.). (2018). *Sahara Occidental*. Tours: Presses universitaires François-Rabelais. https://doi.org/10.4000/books.pufr.21075

Deych T.L.. Tsvetkova N.N.. Kravtsov K.S. (2022). Africa's Digital Economy Development and China's Participation. *Outlines of global transformations: politics. economics. law*. № 15(4). Pp. 6–22. (In Russ.). https://doi.org/10.31249/kgt/2022.04.01

Dobra A. (2012). The democratic impact of ICT in Africa. *Afrika Spectrum: Deutsche Zeitschrift für Gegenwartsbezogene Afrikaforschung*. Vol. 47. № 1. Pp.73–88. https://doi.org/10.1177/000203971204700104

Geoghegan L.. Lever J.. McGimpsey I. (2004). *ICT for Social Welfare. A toolkit for managers*. Bristol: The Policy Press.

Gribanov Yu.I. (2019). Digital transformation of socio-economic systems on the basis of development of the institute of service integration. Doctor of Sciences (Economics) Dissertation. St. Petersburg. (In Russ.)

Hashemi I. Bozza S. (2021). At-Tijara al-iliktruniya fi-l-Jaza'ir: waqiaha wa tahaddiyatuha ad-daribiya. (E-Commerce in Algeria. Tax Facts and Challenges). *Revue Recherches et Etudes en Développement*. № 8(2). Pp. 375–392. (In Arabic)

Ildyakov A.V. (2024). Challenges of Cooperation between Russian and African Small and Medium Enterprises in the Field of Innovation. *Journal of the Institute for African studies*. № 1(66). Pp. 48–65. (In Russ.). https://doi.org/10.31132/2412-5717-2024-66-1-48-65

Khalfallah H.. Bendjelloul K. (2023). The reality of digital transformation in Algeria: an analysis of international indicators. *Journal of Economic & Financial Research*. Vol. 10. Pp. 776–802. http://doi.org/10.37164/2056-010-001-036

Kwasi S.. Cilliers J. (2020). Stagnation or growth? Algeria's development pathway to 2040. *North Africa Report 5*. Pretoria: Institute for Security Studies.

Lahmar A.. Benzidane H. (2019). ICT in Algeria: Reality and Prospects. *Strategy and Development Review*. Vol. 9. № 1. Pp. 148–162.

Loucif A. (2023). Accelerating Digital Transformation to Achieve Sustainable Development in Algeria. *Agathos*. Vol. 14. № 2 (27). Pp. 225–240.

Maslov A.A. (Ed.). (2023). *Africa 2023. Opportunities and Risks: Expert and Analytical Reference Book*. Moscow: HSE University. (In Russ.)

Novikova Z.V. (2019). Digital Transformation of the Economy as a Vector of Africa's Development. In: Morozenskaya E.V. (Ed.). *African Economy in The Age of Global Technological Revolution.* Moscow: Institute for African Studies of the Russian Academy of Sciences. Pp. 78–90. (In Russ.)

Prikhodko D.. Sherov-Ignatiev V. (2024). Digital economy in Africa: condition and problems of development. *St Petersburg University Journal of Economic Studies*. № 40 (1). Pp. 3–35. (In Russ.). https://doi.org/10.21638/spbu05.2024.101

Salem N.. Benmessahel A.R. (2021). Waqiiya wa afaq taf'iil al-hidma al-umumiya al-iliktruniya fi-l Jaza'iir. (The reality and prospects of activating the electronic public service in Algeria.) In: Labid I.. Mouzai B. (Eds.) *Raqmana hidamat al-marfaq al-'amm fi-l Jaza'ir: al-waqia. al-afaq. at-tahaddiyat. (Digitizing public utility services in Algeria: reality. prospects. challenges*.) Berlin. Democratic Arabic Center. Pp. 109–119. (In Arabic)

Sari M.. Aouaidjia O. (2024). The Development of the Electronic Administration in Algeria According to UN Indicators. Russian Law Journal. Vol. XII. Issue 22024. Pp. 2826–2833.

Tatarinov A.A.. Ustinova N.E. (2021). Measuring the ICT Sector in the Digital Economy. *Voprosy statistiki*. №28 (6). Pp. 5–17. (In Russ.) https://doi.org/10.34023/2313-6383-2021-28-6-5-17

Tkachenko A.A. (2022). Building science and technology capacity in North African countries and enhancing its inclusiveness. In: Morozenskaya E.V. (Ed.). *Scientific and Technological Potential of Modern Africa*. Moscow: Institute for African Studies RAS. Pp. 44–50. (In Russ.)

Usacheva V.V. (2014). Africa in the 21st Century: The Development of Information Technologies and the Socio-Cultural Transformation of African Societies. In: Bondarenko D.M.. Demintseva E.B. (Eds.). *Africa: Processes of Socio-cultural Transformation*. Moscow: Institute for African Studies. Pp. 140–151.

Wheeler D.L. (2017). *Digital Resistance in the Middle East: New Media Activism in Everyday Life*. Edinburgh: Edinburgh University Press.

Williams M.. Mayer R.. Minges M.. Foster V.. Briceno-Garmendia C. (Eds.). *Africa's ICT Infrastructure*. Washington: IBRD/ WB. 2011. https://doi.org/10.1596/978-0-8213-8454-1

Zakaria M.. Benchohra M. (2024). Algeria's Digital Economy and Digital Platform Reality. *Recherches Économiques*. Vol. 19. № 2. Pp. 10–27.

Научная статья

РАЗВИТИЕ ИКТ-ИНФРАСТРУКТУРЫ АЛЖИРА В КОНТЕКСТЕ ЦИФРОВОЙ ТРАНСФОРМАЦИИ

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Аннотация. Развитие отрасли информационно-коммуникационных технологий (ИКТ), которая является ядром цифровой экономики, в Алжире приобретает особую важность в свете мирового перехода к так называемой Индустриализации 4.0. и планов алжирского руководства вывести Алжир, который занимает третье место в Африке по объему экономики, в региональные лидеры по уровню цифровизации. В августе 2024 г. алжирский парламент одобрил концепцию развития отрасли «Цифровой Алжир-2030», в рамках которой было запланировано выделение значительного бюджетного финансирования на реализацию инфраструктурных ИКТ-проектов. Цель данного исследования заключалась в оценке состояния ИКТ-инфраструктуры Алжира и степени ее готовности к воплощению национальной концепции цифровизации. Автором была изучена обнародованная в мае 2025 г. стратегия «Цифровой Алжир-2030», критически обобщены данные международных рейтингов и дана сравнительная характеристика ИКТ-отрасли Алжира в региональном срезе, проанализированы качественные характеристики, особенности формирования и структура ИКТ-рынка Алжира. В результате был сделан вывод об относительном прогрессе Алжира в развитии ИКТ-инфраструктуры, ее принципиальной готовности в ближайшие год-два обеспечить качественный технологический рывок (применение сложных технологий искусственного интеллекта, облачных вычислений, Больших данных), выделены перспективные направления сотрудничества России с Алжиром в сфере ИКТ. Это профильная подготовка кадров, финансовые цифровые технологии, концепции «умного города» и электронного правительства, автоматизация сельского хозяйства и промышленности с помощью ИИ, разработка и передача программного обеспечения и оборудования (центры обработки данных, серверы, инфраструктура для *5G*-вещания). Активная политика алжирских властей в ИКТ-сфере позволяет рассчитывать в будущем на экономический дивиденд от цифровой трансформации, ожидать увеличения вклада ИКТ-сектора в национальный ВВП.

Ключевые слова: ИКТ, Алжир, цифровизация, четвертая промышленная революция, Интернет, государственная политика, цифровое общество, цифровая экономика

Конфликт интересов: автор заявляет об отсутствии конфликта интересов.

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