



The Digital Economy as a Mechanism for Attracting Foreign Direct Investment to Algeria during the period (2020_2024)

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Received :15/04/2025

Accepted :21/05/2025

Published :01/06/2025

Abstract:

The study aims to explore the state of the digital economy in Algeria and analyze its impact on attracting and enhancing foreign direct investment. This is achieved by examining the current state of the digital economy in the country and identifying the challenges it faces, along with presenting a set of international indicators that provide a comprehensive evaluation of Algeria's digital performance, helping to assess the development level of this sector. Based on this analysis, the study will determine the role of the digital economy as an effective mechanism for attracting foreign direct investment to Algeria.

The study concluded with a set of findings and recommendations, the most significant of which is that the level of digital economy development in Algeria faces several constraints and challenges that limit its effectiveness in attracting foreign direct investment. Consequently, the recommendations emphasized the need for the government to intensify efforts to develop the digital economy by improving technological infrastructure, addressing regulatory shortcomings, and enhancing the digital environment to support investments and increase the competitiveness of the national economy.

Key words: Digital Economy, Foreign Direct Investment, Digital Infrastructure, Algeria.

Jel Classification Codes : O33, F21, L96,O55.

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Introduction:

The world is currently undergoing a rapid digital transformation that impacts all economic and social sectors, with the digital economy becoming a fundamental pillar for sustainable economic growth. This growth relies on the use of information and communication technology (ICT) to develop businesses and stimulate innovation, thereby enhancing the competitiveness of nations in an ever-changing global market. In this context, the digital economy in Algeria is one of the key factors that can contribute to improving the investment environment and attracting foreign direct investment (FDI).

Algeria seeks to leverage digital transformations to enhance economic diversification and create an attractive environment for foreign investment, especially amidst both local and global economic challenges. Foreign direct investment is considered a vital source of capital and modern technology that contributes to upgrading infrastructure, achieving sustainable development, and creating job opportunities. Therefore, the increasing role of the digital economy serves as a strategic tool in attracting these investments, providing an environment conducive to enhancing efficiency and productivity across various economic sectors.

This paper will explore the relationship between the digital economy and foreign direct investment in Algeria, focusing on the opportunities and challenges presented by this digital environment to encourage investment and improve the country's investment climate. By answering the following key question:

What is the role of the digital economy as a mechanism for attracting foreign direct investment to Algeria?

Sub-Research Questions

Based on the main research problem, a set of sub-questions has been formulated, which include:

- What is the importance of enhancing the digital economy, and what are the main challenges it faces?
- What is the reality of foreign direct investment in Algeria?
- What is the nature of the relationship between the digital economy and foreign direct investment flows in Algeria?

Research Objectives

This paper aims to:

- Highlight the most important factors affecting the attraction of foreign direct investment and assess its current status in Algeria.
- Analyze the state of the digital economy in Algeria and review its level of development.
- Study the relationship between the digital economy and the attraction of foreign direct investment to Algeria.

Study Structure

To address this research problem, the following proposed methodological framework is outlined:

- The Concept of the Digital Economy.
- Foreign Direct Investment in Algeria.
- The Contribution of the Digital Economy as a Mechanism for Attracting Foreign Direct Investment to Algeria.

1. Research methodology

An inductive methodology has been adopted to address the research topic. This approach relies on analysis and description by examining the concept of the digital economy and its importance, with a focus on foreign direct investment, its significance, and its key determinants.

Afterward, the indicators related to the development of the digital economy in Algeria are analyzed to investigate the relationship between this development and foreign direct investment flows into the country, contributing to providing a comprehensive view of the topic.

2. The concept of the Digital Economy

The digital economy is experiencing rapid growth driven by technological innovations that have reshaped production patterns and trade methods. This transformation has contributed to the development of new concepts and characteristics that emphasize the importance of knowledge and innovation, reflecting the nature of the modern economy, where technology serves as a fundamental pillar.

2.1 Definition of the Digital Economy

Since the emergence of the term "digital economy" globally, various perspectives and definitions have been proposed, referring to it with different names such as the "new economy," "global economy," "internet economy," and "web economy." This has made it a subject of study and analysis by numerous researchers and institutions. In this context, here are some prominent definitions of this concept:

Atkinson and Kay-Mc define it as the intensive and increasing use of information and communication technology across all economic aspects. It is an economy of abundance in ideas, talents, resources, and even job opportunities from certain perspectives or regions (Malecki & Moriset, 2008, p. 13).

According to the Australian Bureau of Statistics, the digital economy is described as "the global network of economic and social activities activated by platforms such as the internet, mobile networks, and sensors, including e-commerce. It is also driven by efforts to enhance efficiency and productivity in production processes, inventory management, and knowledge" (Guerrero, 2015, p. 02).

The United Nations, through its ESCWA (Economic and Social Commission for Western Asia), defines the digital economy as an economy based on digital technology. It is grounded in several key components, including technological infrastructure, hardware, software, and networks, along with the digital mechanisms through which business and economic activities are conducted, such as e-commerce and electronic transactions entirely carried out over the internet (ESCWA, 2017, p. 05).

The World Bank defines the digital economy as a new form of economy that is based on knowledge and digital technologies, through which new digital skills and opportunities are created for society, business, and government. Additionally, the digital economy goes beyond the information and communication technology sector, encompassing most sectors of the economy and society (Puzina, Reutova, Leshenko, Khobotova, & Katunina, 2021, p. 03).

From the above, we can conclude that the digital economy is an economic model that relies on the intensive use of digital technology, including information and communication technology, to enhance economic and social activities. It is centered around technological infrastructure, software, and networks, with a focus on utilizing digital platforms such as the internet and smart applications to achieve efficiency and productivity in economic processes. This economy includes e-commerce, digital transactions, and the development of digital knowledge and skills, extending beyond the information technology sector to cover various sectors of the economy and society, thereby promoting the integration of economic and social dimensions in a globally interconnected context.

2.2 The importance of the Digital Economy

The importance of the digital economy is highlighted through its pivotal role in enhancing economic performance and leveraging advanced technologies to drive economic activities towards sustainable growth. This significance is manifested in several key points, which can be summarized as follows (Freijjat, 2023):

- **Reducing Costs of Access to Global Markets:** The digital economy enables businesses and individuals to access international markets with high economic efficiency, while reducing traditional financial and logistical burdens.
- **Enhancing the Effectiveness of Electronic Transactions:** The digital economy provides a flexible and efficient platform to facilitate trade exchanges between various parties through direct digital communication.
- **Improving Business Management Efficiency:** It contributes to optimizing the administrative processes of organizations by accelerating decision-making, reducing operational errors, and cutting administrative costs, which supports investors' rights and increases economic returns.
- **Supporting Digital Manufacturing Systems:** It enables companies to implement modern productivity models that rely on digital technologies to manage supply chains, schedule operations, and control industrial resources with greater accuracy and efficiency.
- **Eliminating Spatial and Temporal Constraints:** The digital economy removes traditional geographical and temporal barriers, enabling businesses to interact more flexibly with global market demands and address regulatory constraints with greater ease.

3. Foreign Direct Investment in Algeria

3.1 The Concept of Foreign Direct Investment (FDI)

3.1.1 Definition of Foreign Direct Investment

There are various definitions of Foreign Direct Investment (FDI), some of the most notable of which are as follows:

The International Monetary Fund (IMF) defines FDI as the investment by a company or enterprise in projects abroad, where the investor holds at least 10% or more of the equity capital of the project, with the ownership allowing for influence in its management (Eltony, 2022, p. 348).

The United Nations Conference on Trade and Development (UNCTAD) defines FDI as foreign investments in fixed capital assets in a particular country, involving a long-term relationship that reflects benefits to the investor in another country. The investor, whether an individual, company, or institution, has the right to manage and control the assets either from the home country or the host country (UNCTAD a. , 1999, p. 267).

The World Trade Organization (WTO) defines FDI as a process by which an investor located in one country (the home country) uses its assets in another country (the host country) with the intention of controlling them (Bertrand & Ridaha, 1998, p. 03).

Based on these definitions, foreign direct investment can be described as an investment in which a foreign investor acquires a part or the entirety of a project in a country other than their own, with partial or full involvement in the management of the project, depending on the nature of the intended investment.

3.1.2 The importance of Foreign Direct Investment (FDI)

Foreign Direct Investment (FDI) plays a pivotal role in enhancing the economic development of host countries, offering a wide range of economic and social benefits. Some of the most notable benefits include (Eltony, 2022, pp. 348-349) :

- FDI contributes to the provision of foreign capital flows under competitive terms to support economic development programs and ensure financial stability.
- It fosters the development of integrative relationships across economic sectors, promoting the creation of joint ventures between local investors and foreign companies, thereby increasing the volume of new domestic projects.
- FDI enhances labor productivity through the provision of training and development programs that enable workers to adapt to the latest production, management, and marketing technologies.

- It facilitates the transfer and application of advanced technologies within local economic processes.
- FDI aids in improving the balance of payments by enhancing the quality of domestic products, increasing production and exports, and reducing dependence on imports.
- FDI generates additional government revenue through taxes on profits and customs duties, strengthening public investment and infrastructure development.
- It promotes the implementation of modern, efficient management systems that contribute to improving the performance of both economic and social sectors and optimizing resource utilization.
- It contributes to the increase of national income by supporting industries that serve foreign investments and enhancing local value chains.
- FDI creates opportunities for the participation of international entrepreneurs, helping to bridge the skills gap in management and organization, thus stimulating sustainable development.

3.2 Determinants of Foreign Direct Investment (FDI)

The determinants of Foreign Direct Investment (FDI) are a set of economic, political, legislative, and institutional factors that form the general framework determining the attractiveness of a host country to investors. These factors are classified into four main categories related to the host country and investors (Kaki, 2018, pp. 152-153) :

▪ Institutional Framework and Economic Policies:

Attracting FDI requires stable and appropriate policies, with political stability being a crucial factor in providing an attractive investment environment. Economic policies include elements such as wage and price regulations, exchange rate policies, interest rates, taxes, as well as trade and industrial policies. Additionally, infrastructure plays a significant role in investment decisions, ranking third among investment challenges according to World Bank surveys. Infrastructure includes services such as electricity, transportation networks, and communication systems.

▪ Legal and Regulatory Framework:

Many countries have made efforts to liberalize the systems related to foreign investments, such as removing barriers, improving investment procedures, and offering incentives like tax exemptions, land ownership, and profit repatriation. Some legislation aims to treat foreign investments on an equal footing with national investments, reducing bureaucracy and providing social and recreational services.

▪ Purely Economic Factors:

These factors include the size of the local market, economic growth rate, availability of natural resources, and other factors of production. They can be classified into:

- ✓ Investments seeking to capitalize on the market (such as per capita income and market size);
- ✓ Investments targeting production efficiency (such as labor costs and infrastructure);
- ✓ Investments seeking natural resources (such as oil and minerals) in developing countries, where efficiency and resource availability are more important in attracting investments than government incentives.

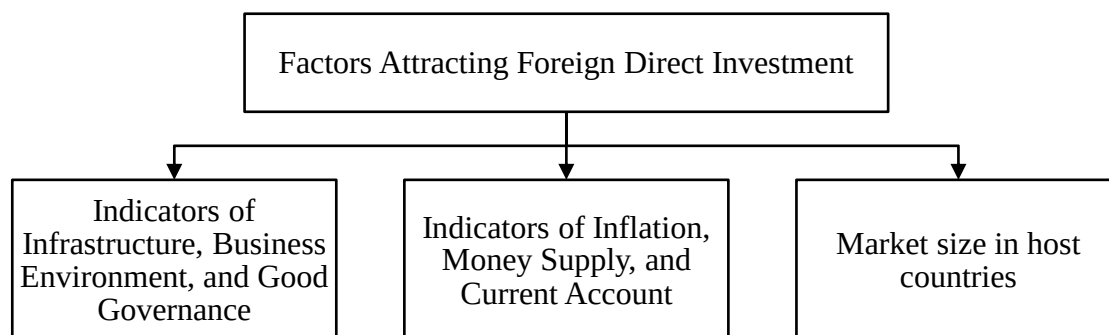
▪ External Determinants:

These include factors such as reducing production costs, avoiding risks, access to technology, and the policies of industrialized countries that encourage foreign investments. The openness of host countries' economies enhances their attractiveness for foreign investments, especially with technological advancement and reduced transaction costs.

Furthermore, various key factors contribute to attracting foreign investments to the host country. These countries strive to attract diverse projects across economic, industrial, and service sectors. To achieve this, they establish a strong foundation and conducive environment that encourages investors to set up their ventures.

Investors typically assess the investment climate of the host country before making decisions, seeking stable conditions and the necessary incentives to ensure the success of projects. As illustrated in the attached figure, these factors highlight the key dimensions influencing foreign direct investment decisions.

Fig.1. Factors Attracting Foreign Direct Investment (FDI)



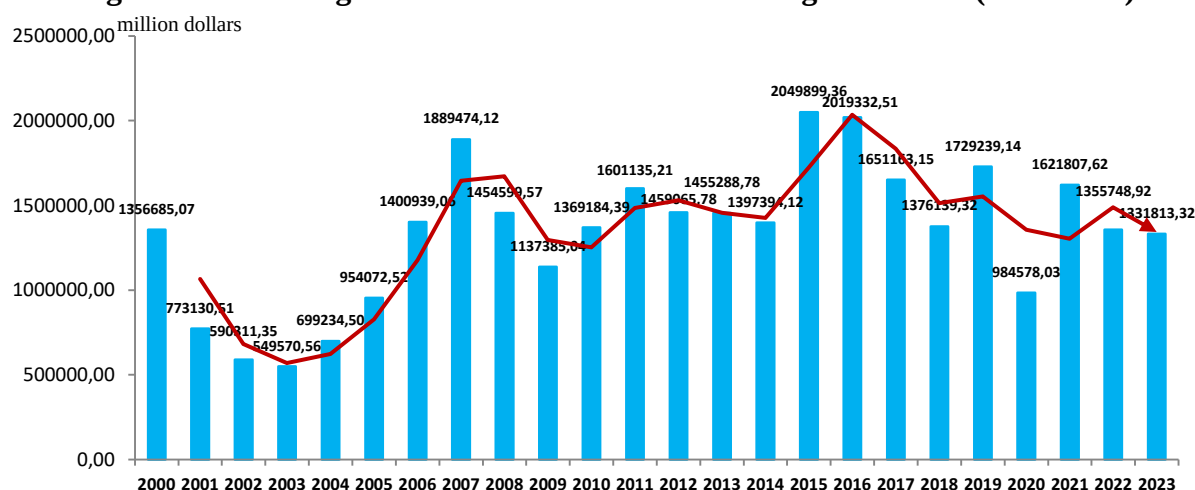
Source: (Ismail, Qasim, & Zaidi, 2022, p. 14)

In addition to the core factors mentioned earlier, there are a set of economic variables that can positively or negatively influence the volume of Foreign Direct Investment (FDI) flows to recipient countries. These variables include the level of credit directed to the private sector, the government expenditure-to-GDP ratio, and the degree of equilibrium in the real exchange rate. Additionally, business environment indicators, such as the efficiency of regulatory procedures and the ease of doing business, are critical factors in shaping a country's attractiveness to foreign investments.

3.3 Global foreign direct investment (FDI) flows

Foreign direct investment flows worldwide have experienced significant fluctuations between 2000 and 2023, influenced by numerous global economic and political events, reflecting the nature and challenges of the global economy. The report on foreign direct investment for 2024 indicates a global decline of 2% in FDI flows, reaching \$1.3 trillion in 2023, with trade and geopolitical tensions impacting the sluggish global economy. The report also highlights that this decline exceeds 10% when excluding certain intermediate European economies, which experienced significant fluctuations in investment flows (United Nations a. , 2024, p. 02).

Fig.2. Global Foreign Direct Investment Flows During the Period (2000-2023)



Source: Prepared by researchers based on (UNCTAD, World Investment Report 2024, 2024)

The report indicated that the decline in flows is primarily attributed to the escalation of geopolitical tensions and concerns related to "greenwashing," which refers to practices aimed at presenting a misleading image of environmental sustainability (United Nations, 2024). This decline was reflected in investment levels across various regions, with foreign direct investment (FDI) flows to developing countries decreasing by 7%, reaching \$867 billion in 2023. There was an 8% decline in developing Asia, a 3% decrease in Africa, and a 1% reduction in Latin America and the Caribbean.

In advanced economies, the flows were significantly impacted by financial transactions of multinational corporations, due to efforts to implement a global minimum tax rate on the profits of these companies. In this context, FDI flows declined by 14% across most of Europe and by 5% in North America (UNCTAD, Global foreign investment weak in 2023, funding for sustainable development sectors drops over 10%, 2024) .

3.4 The Evolution of Foreign Direct Investment in Algeria

Foreign direct investment (FDI) is considered one of the most prominent concepts that has garnered widespread attention from economists and international organizations, due to its pivotal role in enhancing interaction between global economies at various levels. Given its importance in stimulating economic development, all countries, regardless of their level of development, strive to attract foreign direct investment. The flow of these investments has become a global phenomenon, with countries competing to create an attractive investment environment in order to capture a larger share of these flows. This competition is reflected in the substantial incentives offered by countries to benefit from the economic advantages associated with FDI flows.

This drive to attract foreign direct investment has led to increased competition among countries, forcing them to make additional concessions to improve the investment climate. This climate encompasses all the conditions affecting the flow of foreign capital to the host country, such as the economic, social, political, and legal factors that shape the general investment environment. Furthermore, countries aim to remove obstacles and restrictions that may hinder these flows, while providing additional incentives designed to enhance the attractiveness of their investment environments in order to maximize the benefits derived from foreign direct investment (Siti, Hattab, & Matnawi, 2022, p. 126).

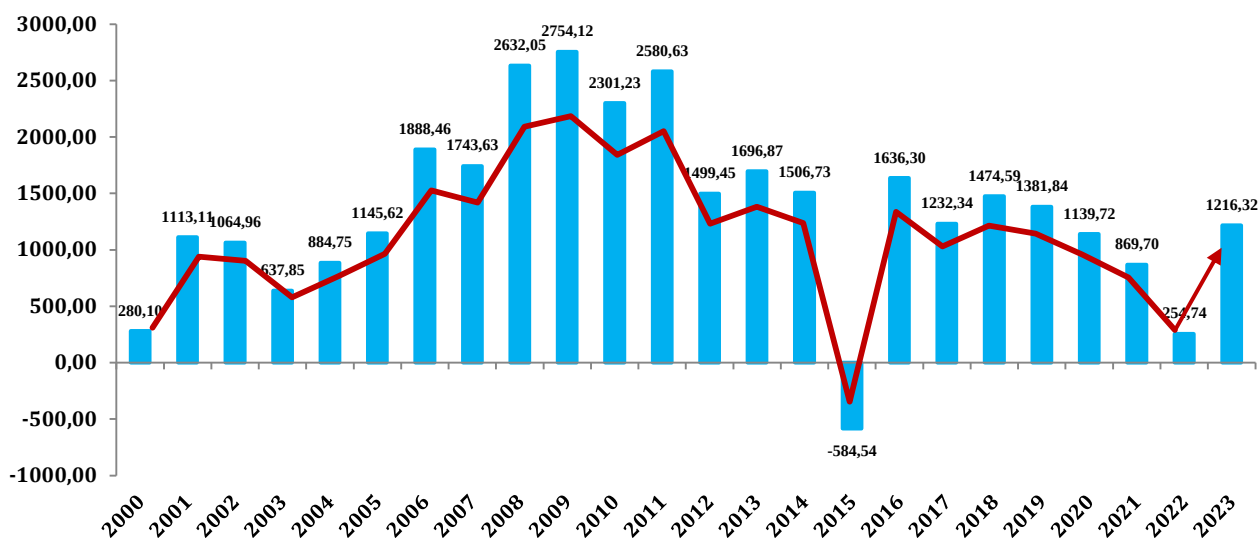
Algeria seeks to integrate into the global economy by adopting numerous reforms in various sectors with the aim of benefiting from foreign direct investment (FDI), which has proven effective in many countries. Since the early 1990s, Algeria has followed a strategy to support and promote foreign direct investment through the adoption of structural and institutional reforms, the most notable of which is the 1990 Money and Credit Law, which addressed the liberalization of foreign direct investment, and the 1993 Investment Promotion Law, amended in 2001 to enable both local and foreign private investments. In addition, Algeria has provided numerous facilities and incentives to boost both national and foreign investment.

However, the results related to attracting foreign direct investment were initially not encouraging. The period from 1993 to 1995 saw an almost complete absence of FDI due to the external debt crisis and the rescheduling of debts under the terms of the International Monetary Fund. However, the period from 1996 to 2000 witnessed a strong return of foreign investments, especially in the hydrocarbons sector, with values ranging between \$260 million and \$607 million, but their contribution to GDP remained weak due to their limited presence in other sectors.

After 2001, foreign direct investment inflows to Algeria began to increase, reaching \$1.108 billion in 2001, representing 2.02% of GDP, and \$633.7 million in 2003, representing 0.93% of GDP. In 2009, inflows rose to \$2.746 billion, representing 1.99% of GDP. According to the United Nations Conference on Trade and Development (UNCTAD) report for 2015, the number of foreign direct investment projects in Algeria from 2003 to 2015 amounted to approximately 375 projects, implemented by 306 foreign companies, with a total cost of \$68

billion (Belghanou & Mawasim, 2024, p. 119) .The following figure illustrates the development of foreign direct investment inflows to Algeria during the period from 2000 to 2023.

Fig.3. Development of Foreign Direct Investment Inflows to Algeria from 2000 to 2023 (in millions of US dollars)



Source: Prepared by researchers based on (UNCTAD, World Investment Report 2024, 2024)

Foreign direct investment (FDI) inflows to Algeria experienced significant fluctuations between 2000 and 2023. In 2000, these inflows totaled \$280.1 million, marking the lowest value. In 2001, they surged dramatically to \$1.113 billion, an increase of \$833 million, or 297.39%. The inflows dropped in 2002 to \$1.065 billion, a decrease of \$48.1 million, or 4.32%, compared to the previous year. In 2003, the decline continued, reaching \$637.85 million, down by \$427.11 million, or 40.10%, from 2002. In 2004, inflows rebounded to \$884.74 million, an increase of \$243.97 million, or 38.24%. The growth continued in 2005, reaching \$1.145 billion, an increase of \$274.15 million, or 31.08%. In 2006, inflows rose sharply to \$1.888 billion, an increase of \$685 million, or 59.25%, compared to 2005. In 2007, inflows declined to \$1.743 billion, a decrease of \$154.26 million, or 9.14%. Between 2008 and 2009, inflows rose to \$2.632 billion and \$2.754 billion, with increases of 56.43% and 62.85%, respectively. In 2010, inflows dropped to \$2.301 billion, a decrease of \$446.56 million compared to 2009. In 2011, inflows increased to \$2.580 billion, an increase of 11.77%. From 2012 to 2014, inflows declined to \$1.499 billion in 2012, \$1.696 billion in 2013, and \$1.506 billion in 2014.

In 2015, inflows turned negative, recording -\$584.54 million. From 2016 to 2019, inflows increased to \$1.636 billion in 2016, then declined to \$1.232 billion in 2017, rose again to \$1.474 billion in 2018, and decreased to \$1.381 billion in 2019. Between 2020 and 2022, inflows declined to \$1.139 billion in 2020, \$869.69 million in 2021, and \$254.73 million in 2022. In 2023, inflows rebounded to \$1.216 billion.

4. Contribution of the Digital Economy as a Mechanism for Attracting Foreign Direct Investment to Algeria

4.1 The Current State of the Digital Economy in Algeria

In the context of the transition to a digital economy, Algeria is striving to achieve digital inclusiveness across both public and private sectors. In this regard, the National Agency for Digital Development was established under Presidential Decree No. 19-317, dated November 26, 2019. This agency plays a pivotal role in laying the strategic foundations for enhancing the use of modern technologies, thereby creating a conducive environment for the growth of the digital economy.

To achieve integration within the digital economy, the development of infrastructure is a critical element. This requires the provision of high-speed internet connectivity, the expansion of wired and wireless communication networks, as well as the formulation of effective legislative frameworks to ensure the protection of stakeholders within the digital environment.

In order to assess the effectiveness of the digital economy in Algeria, we will attempt to present a range of international indicators that provide a comprehensive evaluation of digital performance and determine the extent of development in Algeria's digital economy.

▪ **The Arab Digital Economy Index:**

The Arab Digital Economy Index is a key tool for measuring the effectiveness of the digital transformation process in Arab countries and identifying trends and patterns in the development of Arab government performance. The index is issued by the Arab Digital Economy Federation in collaboration with the Economic Unity Council of the Arab League, as part of the Arab Vision for the Digital Economy initiative led by the federation.

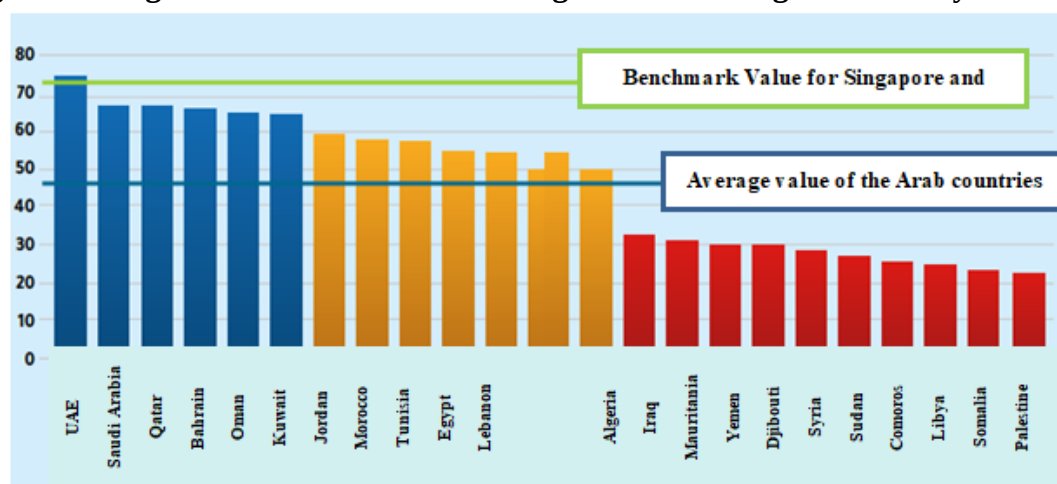
The aim of the index is to assess the extent to which Arab countries are keeping pace with global changes in digital transformation technologies and to evaluate their digital progress within a global context. It uses a rating system ranging from 0 to 100 to determine the level of digital advancement. The index consists of 43 main and sub-indicators, distributed across nine core pillars and five main dimensions (Arab Federation for Digital Economy, 2022, p. 42) , as follows:

- ✓ **Digital Government:** institutions, digital government;
- ✓ **Digital Foundations:** infrastructure;
- ✓ **Digital Readiness of Citizens:** workforce;
- ✓ **Digital Innovation:** innovation, knowledge, and technology;
- ✓ **Digital Business:** market forces, capital market growth.

Based on these dimensions, the Arab Digital Economy Index analyzes the performance of Arab countries and ranks them according to their readiness for the digital economy. The index also provides a comprehensive statistical analysis identifying the factors influencing digital growth and governance, with a focus on developing policies and future models to keep pace with digital transformations.

According to the Arab Digital Economy Index for 2022, Algeria ranked 12th among Arab countries in terms of the index value. This ranking is considered average among the 22 Arab countries included in the index. The value of Algeria's digital economy index reached 46.55 across different dimensions, reflecting an average performance in the capabilities and components of Algeria's digital economy, as illustrated in the following figure:

Fig.4. Ranking of Arab Countries According to the Arab Digital Economy Index 2022



Source: (Arab Federation for Digital Economy, 2022, p. 72)

It is evident that Algeria is ranked within the second group in terms of performance, with a score of 46.55 points. Compared to other Arab countries, Algeria falls at a medium to low level in the index, reflecting the need for continued efforts to improve digital performance, particularly in areas such as digital inclusion, digital skills, and technological project financing.

This situation can be analyzed at several levels to understand the strengths and challenges facing the digital economy in Algeria by analyzing the following strategic dimensions:

Table 1. Algeria's Performance According to the Strategic Dimensions of the Digital Economy

Dimension	Pillar	Index Value	Ranking
Digital Government	Pillar 1: Institutions	50.15	12
Digital Infrastructure	Pillar 2: Infrastructure	42.33	8
Digital Readiness of Citizens	Pillar 3: Workforce	57.86	9
Digital Government	Pillar 4: Digital Government	51.73	11
Digital Innovation	Pillar 5: Innovation	43.54	12
	Pillar 6: Knowledge and Technology	14.05	12
Digital Business	Pillar 7: Market Forces	28.33	12
	Pillar 8: Financial Market Growth	59.23	12
Sustainable Development	Pillar 9: Sustainable Development Goals	71.71	7
Total Index Value		46.55	12

Source: (Arab Federation for Digital Economy, 2022, p. 201)

The data from the 2022 Arab Digital Economy Index indicates that Algeria, as a promising nation, is making efforts to improve its position in the digital economy field. It recorded its highest value in the Sustainable Development Index, with a score of 71.71 points, reflecting significant progress in this area. The remaining indices showed relatively close results, with the Digital Business Index achieving 59.23 points, followed by the Digital Readiness of Citizens Index at 57.86 points, and the Digital Government Index at 51.73 points. On the other hand, the lowest recorded values were in the Digital Innovation Index, at 43.54 points, followed by the Digital Infrastructure Index at 42.33 points, indicating major challenges that need to be addressed to enhance overall digital performance.

▪ Network Readiness Index (NRI):

The Network Readiness Index (NRI) is a comprehensive measure that assesses a country's readiness to leverage information and communication technologies (ICT) to support economic growth and social development (WEF, 2001). The index helps identify strengths and weaknesses in digital systems and guides strategies for technology adoption to achieve sustainable development. It is based on four main pillars: technology, individuals, governance, and impact, each containing three sub-dimensions to evaluate the capacity to effectively adopt and use technology (ITU, 2001). These pillars are as follows:

- ✓ **Pillar 1: Technology:** Includes access, content, and future technologies.
- ✓ **Pillar 2: Individuals:** Includes individuals, businesses, and governments.
- ✓ **Pillar 3: Governance:** Includes trust, regulation, and inclusivity.
- ✓ **Pillar 4: Impact:** Includes the economy, quality of life, and contribution to sustainable development goals.

The four dimensions of the Network Readiness Index (NRI) provide a comprehensive analytical framework for assessing a country's readiness to leverage technology in various contexts. This model allows for the evaluation of the interaction between technology,

individuals, and governance structures to achieve sustainable development outcomes. It also emphasizes the need for the integration of various factors to ensure optimal use of technology in advancing economic and social objectives (Dutta & Lanvin, 2020, p. 25).

In 2024, Algeria ranked 100th out of 133 economies listed in the Network Readiness Index (NRI), reflecting a slight improvement compared to 2023, where Algeria ranked 103rd. This global assessment indicates that Algeria performs moderately well in some pillars, while there are areas that still require improvement (Dutta & Lanvin, Network Readiness Index: Algeria, 2024, p. 01).

On the regional level, Algeria ranks 11th among Arab countries, falling behind the regional average in all four pillars (technology, individuals, governance, and impact). However, Algeria stands out in the sub-pillar related to businesses, where it exceeds the regional average in this category. In this context, Algeria demonstrates varying performance at the overall level, reflecting challenges in achieving integration across different digital factors, despite some successes in specific areas (Dutta & Lanvin, Network Readiness Index: Algeria, 2024, p. 03).

The following table illustrates Algeria's ranking according to the main pillars of the Network Readiness Index (NRI) from 2021 to 2024:

Table 2. Global Performance of Algeria According to the Main Pillars of the Network Readiness Index (NRI) During the Period (2021-2024)

Pillars	2021		2022		2023		2024	
	Performance	Rank	Performance	Rank	Performance	Rank	Performance	Rank
Technology	36.88	90	33.58	100	31.45	97	36.32	85
Individuals	40.61	89	37.92	86	35.63	91	40.24	71
Governance	35.20	118	39.41	107	41.18	106	41.07	109
Impact	42.02	101	47.02	96	41.82	107	39.34	119
Network Readiness Index (NRI)	38.93	100	39.48	100	37.52	103	39.24	100

Source: Prepared by researchers based on: (Dutta & Lanvin, Network Readiness Index, 2021,2022,2023,2024)

Based on the table above, from 2021 to 2024, Algeria has demonstrated fluctuating performance in the Network Readiness Index (NRI) according to the four pillars as follows:

- Algeria showed a slight improvement in its ranking within the technology pillar, advancing from 90th place in 2021 to 85th place in 2024, despite temporary setbacks in 2022 and 2023. This reflects progress in technological infrastructure development.
- In the individuals pillar, Algeria significantly improved from 89th place in 2021 to 71st place in 2024, indicating an increase in digital skills and technological awareness among individuals.
- Regarding the governance pillar, Algeria improved from 118th place in 2021 to 106th in 2023, but then declined to 109th place in 2024. This reflects challenges in digital governance and emphasizes the need to improve relevant laws and regulations.
- In the impact pillar, Algeria experienced a significant decline from 101st place in 2021 to 119th place in 2024, indicating a weaker social and economic impact of information and communication technology in achieving sustainable development goals.

Overall, despite improvements in some areas, Algeria still faces significant challenges in enhancing its digital network readiness, particularly in governance and socio-economic impact. This necessitates further efforts to improve digital infrastructure and promote inclusivity and sustainability.

▪ **Global Innovation Index (GII):**

The Global Innovation Index (GII) contributes to the evaluation of the digital economy by providing a comprehensive analysis of a country's innovation performance through a variety of indicators, such as digital infrastructure, education levels, investments in technology, and the growth of startups. These indicators reflect a country's ability to develop and enhance digital innovation (Dutta & Mia, *The Global Innovation Index 2021: Tracking Innovation through the COVID-19 Crisis*, 2021). The GII is an annual ranking that assesses innovation performance across multiple economies, taking into account the differences between developed and emerging countries. The analytical framework of this index consists of approximately 80 indicators, distributed between innovation inputs and outputs, which are classified under the following key categories (Leogrande, 2024):

- ✓ **Innovation Inputs Index:** This index consists of five pillars that determine the aspects of the economy that create an enabling environment for innovation: institutions, human capital and research, infrastructure, market sophistication, and business sophistication.
- ✓ **Innovation Outputs Index:** This index measures the tangible results of innovation in the economy through two pillars: knowledge and technology outputs, and creative outputs.

Algeria ranked 115th among 133 economies in the Global Innovation Index (GII) for the year 2024. It also ranked 29th out of 38 economies in the category of middle-income countries and 18th out of 18 economies in North Africa and Western Asia. The statistical confidence interval for Algeria's ranking in the 2024 Global Innovation Index ranges between 106th and 124th.

The table below illustrates Algeria's ranking according to the Global Innovation Index (GII) over the period from 2020 to 2024:

Table 3. Algeria's Ranking According to the Global Innovation Index (GII) for the Period (2020-2024)

Year	GII Ranking	Innovation Inputs	Innovation Outputs
2020	121	111	126
2021	120	109	128
2022	115	110	118
2023	119	118	116
2024	115	113	115

Source: (WIPO, 2024)

The table above illustrates Algeria's ranking in the Global Innovation Index (GII) from 2020 to 2024. Algeria ranked 115th in both 2022 and 2024, marking its best position during this period compared to 121st in 2020. This indicates an overall improvement of six positions over five years, despite some fluctuations in performance.

Algeria showed a notable improvement in the ranking of innovation inputs during this period. In 2020, it ranked 111th, advancing to 109th in 2021, before slightly declining to 110th in 2022. However, a significant improvement to 113th in 2024 indicates relative progress in its innovation readiness, including infrastructure, education, and investments.

Algeria has shown significant progress in the ranking of innovation outputs, moving from 126th in 2020, slipping to 128th in 2021, but then making substantial improvements to 118th in 2022 and 116th in 2023. In 2024, Algeria continued its advancement, reaching 115th place, indicating improvements in knowledge production, technology, and economic activities driven by innovation.

These indicators suggest that Algeria has made notable strides in attracting foreign direct investment (FDI). However, the country still faces challenges that require further efforts to enhance its investment environment. It is essential to strengthen economic infrastructure, develop the legal and regulatory framework, and improve institutional efficiency to attract more diversified and sustainable investments. Integrating these factors is a crucial step towards achieving sustainable economic growth and enhancing Algeria's position as an attractive destination for foreign direct investment.

4.2 The most prominent Challenges Facing the Digital Economy: (Hussein, 2022)

- The lack of infrastructure supporting the establishment of such an economy in many countries;
- The absence of trust in conducting electronic transactions, such as electronic payment methods or electronic document authentication;
- The high cost of internet usage in many developing countries compared to the average income of individuals in those countries;
- Weak human resources and the absence of the necessary technological expertise for such types of technological transactions.

4.3 The Importance of Enhancing the Digital Economy in Attracting Foreign Direct Investment

Enhancing the digital economy is considered one of the key factors in attracting foreign direct investment, as it contributes to improving the business environment by streamlining government procedures and ensuring transparency and efficiency. It also enhances the ability of local companies to innovate and expand in global markets thanks to advanced digital infrastructure. The digital economy also offers growth opportunities in new sectors, attracting investors seeking flexible and developed business environments. Ultimately, digital transformation helps reduce traditional barriers and attracts investments that support sustainable development. Below are some dimensions that contribute to attracting foreign direct investment through enhancing the digital economy:

- **Improving Transparency and Efficiency:** Digital technology contributes to enhancing transparency and reducing corruption through electronic systems that facilitate documentation and auditing processes. This transparency makes markets more attractive to foreign investors, as they prefer investments in business environments with a high level of trust. Countries that use technologies such as blockchain and artificial intelligence enjoy high levels of efficiency, which enhances their appeal to foreign investment.
- **Expanding Access to Global Markets:** By promoting e-commerce and digital services, countries focusing on the digital economy can expand their access to global markets. Digital technology helps reduce geographical barriers, further enhancing the attraction of foreign investments. Improving digital infrastructure boosts the ability to attract foreign direct investment by enabling access to global markets.
- **Enhancing Financial Inclusion:** Through information and communication technology (ICT), countries can enhance financial inclusion by making digital financial services accessible to all, which contributes to increasing local demand and investment in small and medium-sized enterprises. This makes the market more attractive to foreign investors seeking access to rapidly growing markets.
- **Improving the Business Environment:** By developing digital infrastructure, the business environment can be significantly improved, making it easier for foreign companies to enter the local market. This includes digitizing government procedures, reducing bureaucracy, and facilitating access to information and services. According to the United Nations Conference on Trade and Development (UNCTAD) report of 2020, countries with a strong digital environment experience increased foreign direct investment flows (UNCTAD b. , 2020).

- **Supporting Innovation and Entrepreneurship:** Enhancing the digital economy leads to increased innovation and opens new areas for digital ventures and entrepreneurship. These sectors are attractive to foreign investors seeking to invest in high-growth, innovative industries. Digital transformation encourages entrepreneurship by facilitating access to new markets and providing modern technological tools to small and medium-sized enterprises (OECD, 2021).

Given the current state of the digital economy in Algeria, it has become essential for the Algerian government to explore ways to develop and enhance the country's digital infrastructure. This effort aims to improve the local investment environment and attract more foreign direct investments by accelerating technological progress through focusing on three key areas (Bashari, 2020, pp. 597-599):

- **Accelerating Technological Development:** This involves investing in innovative technologies and expanding access to high-speed internet. It includes enhancing software and developing digital applications, especially for smartphones, which are key sources of added value in the information and communication technology (ICT) sector. Development is further supported by creating digital operating frameworks and information systems for content distribution and management on the internet.
- **Intensifying the Use of Information and Communication Technologies (ICT):** To accelerate the use of ICT in Algeria, the country should begin by promoting the use of the internet in commerce and management, areas where the country faces delays. This includes improving public administration performance and facilitating online business activities, with a later expansion into sectors such as education, healthcare, and energy. Success depends on enhancing the use of technology through training and knowledge transfer, which strengthens the sector's competitiveness and helps improve the trade balance.
- **Improving ICT Governance:** Enhancing the governance of the ICT sector in Algeria requires addressing several challenges, notably the instability in the economic and legislative environment, and the geographical disparity in access to high-speed internet. It is crucial to improve legislative and executive frameworks related to business operations in the digital world, to foster competition and keep pace with rapid sectoral developments. Additionally, improving the business environment is essential for encouraging investments in technological equipment and software, requiring adjustments to the tax system and the creation of new financing mechanisms to support sector growth.

5. Conclusion

In conclusion, the study emphasizes the importance of the digital economy as a strategic mechanism for attracting foreign direct investment (FDI) and promoting sustainable economic development in Algeria. Data and analyses show that Algeria is striving to improve its digital infrastructure and enhance its capabilities in the fields of technology and digital governance. Despite notable progress in some areas, such as digital infrastructure and technological capacity building, Algeria still faces significant challenges that require effective solutions to strengthen overall digital performance.

Based on the preceding, we can summarize the key findings of the study as follows:

- The digital economy enables the adoption of modern technological technologies and advanced telecommunications infrastructure, contributing to the emergence of innovative industries based on technology and innovation.
- The digital economy plays an increasingly important role in attracting foreign direct investment by providing a more efficient investment environment, as it fosters innovation and improves productivity across various economic sectors.

- An advanced digital economy enhances the quality of services provided by the host country, leading to increased flexibility and attractiveness of the investment climate, particularly for foreign investments.
- The regulatory frameworks for foreign investments and administrative obstacles are among the key factors hindering the inflow of foreign direct investment into Algeria.
- The digital economy in Algeria faces multiple challenges, including insufficient digital infrastructure, weak use of technology in some economic sectors, and certain regulatory restrictions that limit the effectiveness of digitalization.
- The Information and Communication Technology (ICT) sector in Algeria faces significant challenges, resulting in negative impacts on the growth of the digital economy and reducing the country's attractiveness as a destination for foreign investment.

6. Recommendations

Consequently, we can outline a series of recommendations that would enhance Algeria's capacity to attract foreign direct investment through the strengthening and development of the digital economy sector, thus contributing to fostering sustainable economic growth and achieving competitiveness in global markets:

- Efforts should be intensified to develop communication and digital infrastructure in line with global developments, including expanding digital coverage and providing a secure environment for digital transactions to attract foreign direct investment.
- Work should focus on creating a favorable legal and regulatory environment for foreign investment by adopting flexible and effective regulatory policies that support digital investments and enhance the digital business environment, including protecting foreign investors' rights and providing clear and streamlined procedures for establishing companies and obtaining business licenses.
- There should be an emphasis on developing digital skills among the local workforce through specialized educational and training programs to improve citizens' ability to engage with the digital economy and enhance the country's capacity to attract investment in this sector.
- Encouraging collaboration between the government and private companies in developing the digital economy will enhance Algeria's ability to attract foreign direct investment, contributing to the development of the business environment and achieving sustainable economic growth.
- By supporting technological innovation and developing technical solutions, the digital economy in Algeria can become a key driver of economic growth, thereby increasing its attractiveness to foreign investments.

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