Economic Studies ISSN 1112-7988 / E-ISSN 8627-2710
volume : 25 issue: 02 year : 2025 PP : 355-

The implication of the COVID-19 pandemic on investments trends in Algeria's digital economy, an analytical study (2020-2024)

Midoun Ilyes* , University Centre of Illizi (Algeria), midoun.ilyes@cuillizi.dz

Ayad Salah, University of Adrar (Algeria), sal.ayad@univ-adrar.edu.dz

Assassi Ahmed, Universiti Sultan Zainal Abidin, (Malyasia), si3960@putra.uniza.edu.my

Received: 20/03/2025	Accepted: 08/05/2025	Published: 31/12/2025

Abstract:

This paper aims to examine the effects of the COVID-19 pandemic on the digital economy, with a specific focus on Algeria, while also exploring global investment trends and types. The research is done by a thorough analysis that encompasses both theoretical and practical components. It is observed that the pandemic has catalysed investments in various sectors of the digital economy. Additionally, Algeria faces challenges due to structural weaknesses such as poor infrastructure, regulatory inefficiencies, and limited digital literacy. Nonetheless, the study highlights potential avenues for Algeria to strengthen its digital economy through strategic investments, policy enhancements, and collaborations between the public and private sectors.

Keywords:

Digital economy; Digital FDI; Covid-19, Global economy, Algeria.

* **Corresponding author:** Midoun Ilyes

1. INTRODUCTION:

The COVID-19 pandemic and related lockdowns around the world have disrupted global healthcare and economic production. Never before- seen shifts in global value chains took place, creating a highly uncertain business and investment environment. Amid these trends and even during the height of the pandemic (Cutean, Akshay, & Ye, 2022).

The digital economy significantly influences the global economic framework, fostering the emergence of new companies and sectors while revolutionizing traditional business models and the overall organization of the economy. This transformation extends to governmental operations and the provision of public services. The rapid expansion of digitalization, further propelled by the pandemic's social and economic repercussions, in 2020, global foreign direct investment inflows experienced a significant decline of one third. Nevertheless, such investments surged to more than USD 850 billion in the first half of 2021, more than doubling the figures recorded in the latter half of 2020, according to the OECD (2021). These investments are essential for promoting a robust, a resilient and equitable economic revival, leading many governments around the world to emphasize the digital economy in their recovery plans and initiatives (Alexandre & Shelley , 2021).

Algeria, like many developing countries, faces unique challenges in leveraging the opportunities presented by the digital economy. Although there is a worldwide increase in digital investment, Algeria's progress in digital transformation is impeded by structural challenges, including inadequate infrastructure, regulatory inefficiencies, low levels of digital literacy, and a dependence on conventional economic sectors (Group, 2025). The pandemic has revealed these weaknesses, underscoring the critical necessity for Algeria to expedite its digital transformation to maintain competitiveness in an increasingly dynamic global economy.

1.1. Statement of the Problem:

This analysis leads to the formulation of the following research questions:

What effects has COVID-19 had on global investment in the digital economy overall, and what are its specific implications for Algeria?

1.2. Research Questions:

This research paper aims to ask the below key questions:

1. What is digital economy? and how has the pandemic fast digital transformation across different sectors around the globe?
2. How has the pandemic influenced global investment trends in the digital economy, and what are the consequences for developing countries like Algeria?
3. What opportunities exist for Algeria to enhance its digital economy in the post-pandemic era, and what strategies can be adopted to overcome existing barriers?

1.3. hypotheses:

In term of formulating hypotheses for this study, and based on the above arguments, three hypotheses can be generated as follow;

- **H1:** The COVID-19 pandemic has accelerated global investment in the digital economy, driven by increased demand for digital services, remote work, and e-commerce.
- **H2**: There is a significant disparity in regional Digital Investment during and post covid-19 pandemic
- **H3:** The Algerian government's response to the pandemic, including stimulus packages and digital initiatives, has had a limited impact on boosting investment in the digital economy.

1.4. Significance of the Study:

- Filling Research Gaps: The study addresses a critical gap in the literature by examining the pandemic's impact on global digital investment trends and their specific implications for developing countries like Algeria.
- Interdisciplinary Insights: By combining insights from economics, technology, and public policy, the study provides a holistic understanding of the digital economy's evolution during and after the pandemic.
- Regulatory Improvements: The study will highlight regulatory barriers and propose reforms to create a more conducive environment for digital investment.

1.5. Study Objectives :

- The objective is to examine how the pandemic has influenced the rapid advancement of digital technologies transformation across various industries.
- To identify key digital technologies adopted by businesses, governments, and individuals in response to the pandemic.
- To provide recommendations for businesses, policymakers, and educators on leveraging digital transformation for future crisis preparedness.

1.6. methodology of the Study:

To test these hypotheses, we could:

- Analyse global and Algerian investment data in the digital economy pre- and post-COVID-19.
- Compare Algeria's digital economy performance with regional and global benchmarks.
- Examine government policies and their impact on digital investment.

By exploring the hypotheses, the research can provide insights into how the pandemic has reshaped global and Algerian investment in the digital economy, as well as actionable recommendations for policymakers and businesses.

1.7. previous researches:

The pandemic has profoundly affected multiple sectors of the global economy, particularly the digital economy. It has prompted a rapid increase in both investment and adoption rates of digital technologies as businesses and consumers have had to adapt to new ways of operating during the crisis. The rapid development of digital economy activities has required banks and other industries to undergo digital transformation to remain competitive and relevant in their respective sectors. (Shanti et al., 2023) The banking sector, for instance, has experienced a surge in digital adoption and investment as the pandemic has forced customers to rely more on online and mobile banking services due to lockdowns and social distancing measures. Similarly, the pandemic has highlighted the importance of digital foreign direct investment as a driver of economic recovery, with policymakers in countries like the United Kingdom focusing on creating a favourable climate for digital FDI to stimulate growth. (Moukil & Attallah, 2021). To best of our knowledge, we assert that this paper represents the inaugural study investigating the influence of the COVID-19 pandemic on the rapid advancement of investment in Algeria's digital economy.

1.8. Structure of the Study:

The subsequent sections of the paper are organized as follows. The next section provides a theoretical analysis along with a concise overview of the history of digitalization. Section three examines the practical effects of Covid-19 on the digital economy. In section four, we analyse the implications of pandemic on digital economy investments in Algeria, while section five concludes with recommendations and outlines the study's limitations.

2. Theoretical framework:

2.1 What is Digital economy?

The concept of the digital economy is rooted in the work of Tapscott (1996) in his publication, he emphasized that while the traditional economy was characterized by physical information, the emerging digital economy transforms information into a digital format. This shift means that all types of information are converted into bits, which are stored in computers and transmitted at the speed of light through various networks (Hintošová, 2021).

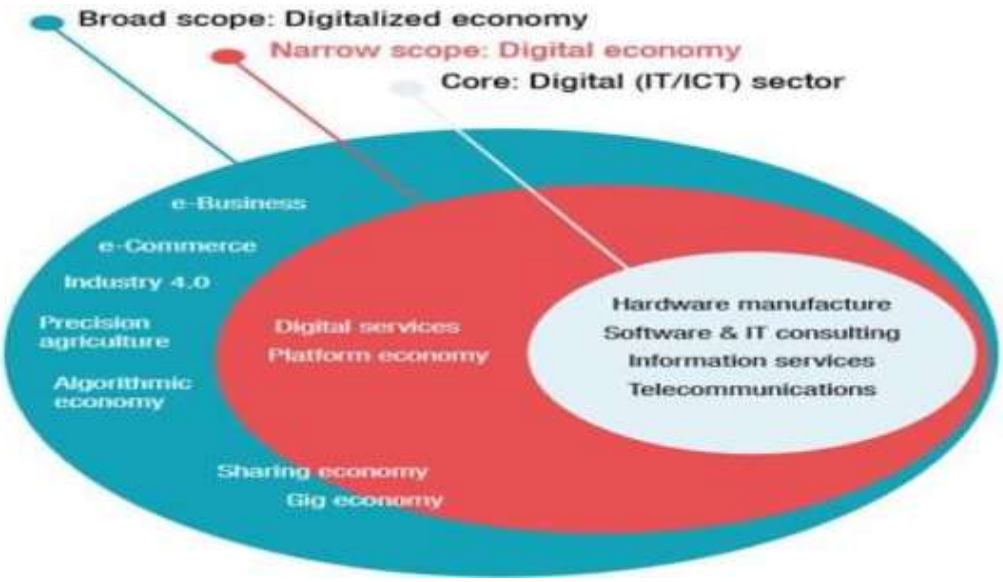
Additional definitions pointed up the key role of Internet through which electronic business and electronic commerce is stimulated. In this context, WIR, 2017 characterizes the digital economy as the utilization of Internet-driven digital technologies in the production and exchange of goods and services. (Satyanand, Foreign Direct Investment

and the Digital Economy, 2021).

More simply put, the digital economy refers to a series of economic activities based on digital technology with a digital platform as the main medium supported by digital empowerment infrastructure. Its content more than digital transactions, such as infrastructure, digital media, and digital goods and services to ensure the usual development of digital transactions. It is an all-round and multi-dimensional economic system (Zhang & Shang, 2022). Besides this, the authors also explicitly recognized the segment of the information and communication technology (ICT) industry (production of ICT goods and services (Hintošová, 2021).

The digital economy, as illustrated in figure 1, is composed of three distinct layers (UNCTAD, 2019). At its foundation lies the physical infrastructure of telecommunications and the Internet, which includes essential components such as telecom towers, fibre-optic cables, telephones, mobile devices, computers, and laptops. This infrastructure is fundamentally linked to the software that enables its functionality, encompassing Internet connectivity, encryption systems, order management applications, and financial and payment solutions. Above this foundational layer is the digital and information technology sector, which utilizes digital devices and connectivity to create and provide software applications and digital services. The outermost layer represents the diverse array of consumers, businesses, governments, and institutions globally that rely on the digital connectivity and offerings produced by the two inner layers for their daily activities and operations (Satyanand, Foreign Direct Investment and the Digital Economy, 2021).

Figure N°01: The framework of the digital economy



Source: (Unctad, 2019)

The advancement of the core and intermediate layers directly contributes to the growth of the broader economy. As the broader economy increasingly adopts advanced digital technologies and applications, it is likely to witness significant changes in established patterns of production and consumption. (Satyanand, Foreign Direct Investment and the Digital Economy, 2021).

2.2 Brief history of Digitalization:

The evolution of digital and technological advancements commenced with the invention of the electronic computer during World War II. Over the following decade, significant improvements were made in data storage and processing speeds. By the 1980s, computer usage expanded to various sectors, including public administration, universities, research institutions, military services, small and medium-sized enterprises, and households. The 1990s marked a new phase in this evolution, characterized by the rise of the internet, advancements in telecommunications, robotics, and artificial intelligence. Today, nations are classified as developed or developing based on their technological capabilities and innovative practices. (Zhao, et al., 2022).

In the post-pandemic era, the digital economy possesses a significant technological edge, leveraging the vast potential of a large market and domestic demand (Zhang & Shang, 2022). The latest technologies have largely supplanted manual labour across various facets of life. Digital innovations have enhanced living standards, increased productivity, and improved employment rates. This advancement in technology signifies a transformative shift, profoundly affecting individuals and their practices by fostering speed, efficiency, and reduced error rates. Such improvements not only bolster performance and economic growth but also enhance brand reputation and competitiveness. Notably, this transformation extends beyond communication, reshaping how people work and live by improving access to education, finance, and job opportunities, while also facilitating common platforms for services, such as electronic government, social networks, and electronic commerce. (Zhao, et al., 2022).

It is no exaggeration to say that it is one of the most destructive events in the modern world. In general, it affected the health of all humans around the globe, therefore, The World Health Organization (WHO) coordinated human, material, and financial resources to promote global cooperation in the outbreak to protect the lives and health of all human beings. As a result, it slowing down the normal functioning of society as a whole. The World Trade Organization (WTO) is concerned with the impact of the pandemic on trade activities. On the other hand, so many academies and scholars in different fields are also concerned with the impact of pandemic on various sectors of society as a whole and try to tackle the crisis through theoretical studies and practical case studies (Zhu & Xie, 2022).

Digital and technological advancements have significantly accelerated in the wake

of the pandemic, propelling a shift towards online work. This transformation has not only enhanced progress within organizations but has also impacted public institutions and individual lives. Crucially, these advancements enabled countries to sustain normal operations during the pandemic, acting as a pivotal force in reshaping business strategies, lifestyles, and work patterns. Furthermore, they have catalysed the adoption of cutting-edge technologies in the business sector. The growing emphasis on digital and technological progress has captured the interest of both academics and policymakers, highlighting the societal and economic benefits associated with big data, artificial intelligence, and emerging technologies. (Zhao, et al., 2022).

3. How the pandemic boosts the transformation to the digital economy:

As mentioned earlier, the pandemic has accelerated digitalization across industries. Developments like working from home arrangements, online shopping, and automated manufacturing during the pandemic are likely to continue after the pandemic and drive further digitalization. At the same time, accelerated digitalization also requires more robust and accessible digital infrastructure, which is fundamental to growing the digital economy (Cutean, Akshay, & Ye, 2022).

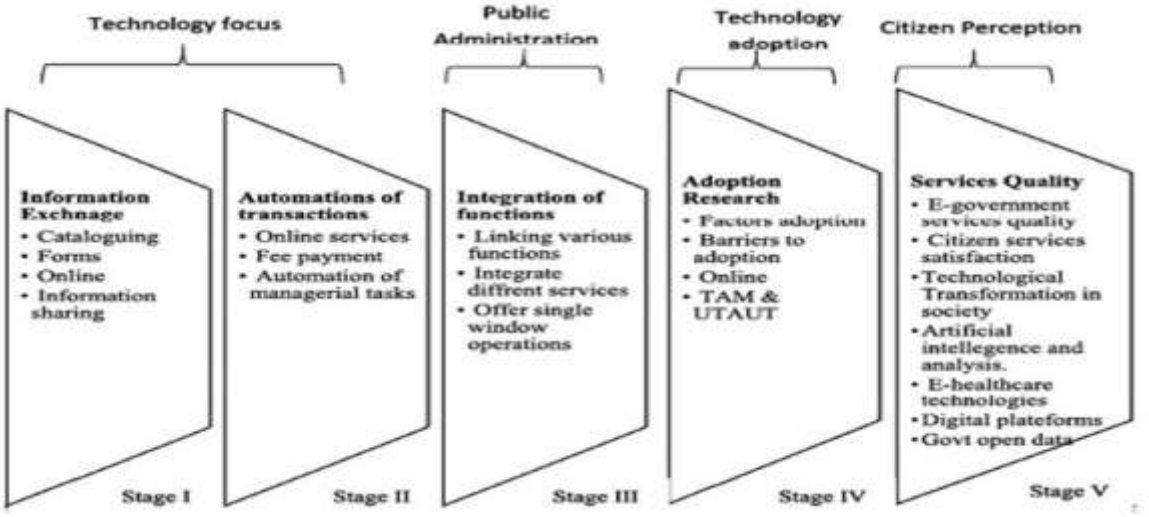
3.1 E-government:

E-government has garnered significant interest from policymakers, economists, and researchers, particularly in light of the pandemic's demands. The likelihood of corruption is generally lower in e-government systems compared to traditional governance. This digital approach fosters a trust-based relationship between the government and its citizens. The success of various governmental initiatives relies heavily on citizen engagement, which is facilitated by confidence in transparent processes. Furthermore, e-government enhances a nation's per capita development by increasing the efficiency of public sectors (Zhao, et al., 2022).

Moreover, the evolution of e-government is categorized into five distinct stages, as illustrated in Figure 2. The initial two stages primarily emphasize technological advancements. The first stage involves the exchange of information through the implementation of modern ICT tools, while the second stage pertains to the automation of financial transactions. The third stage shifts its focus to public administration, highlighting the delivery of government services, the sharing of information, and necessary administrative reforms. In the fourth stage, research on e-government pivots towards the methods of technology adoption and the barriers encountered in this process. Finally, the fifth stage examines citizen perceptions, encompassing aspects such as service quality, online services, and the impact of technological transformation and digital platforms. Additionally, the relationship between the E-Government Development

Index (EGDI), ICT exports, the growth of internet users, urbanization, and unemployment rates in the context of sustainable economic growth is further elucidated through relevant literature. (Zhao, et al., 2022).

Figure N°02: E-Government Evolution Stages.



Source : (Zhao, et al., 2022).

3.2 Digital Services and Electronic Commerce Expansion :

Governments must establish the frameworks and technical specifications that will allow consumers, businesses, and institutions to engage in digital transactions and money transfers, encompassing digital banking, mobile wallets, and cryptocurrencies. An associated challenge lies in achieving the standardization of digital payment technologies and services to facilitate interoperability among various service providers and across different regions. Additionally, governments will need to determine the range of digital financial services that both banks and non-banking entities can provide, which may include formal credit, peer-to-peer lending, savings, insurance, and securities (Satyanand, Foreign Direct Investment and the Digital Economy, 2021). Therefore, many businesses shifted from traditional models to digital-first approaches, reinforcing the necessity of digital investment (Le Thanh & Nguyen, 2022).

3.3 Digital foreign direct investment:

In general, the COVID-19 pandemic initially had a negative impact and caused a sharp decline in traditional FDI, prompting a shift toward digital FDI as businesses and investors adapted to new economic realities (Moukil & Attallah , 2021), but government interventions such as economic support, trade facilitation, and digital infrastructure development helped mitigate this effect (Souhaila & Youssra, 2022), This response has subsequently heightened the demand for data centres and cloud facilities, which are

essential for supporting automation, expanding internet access, and facilitating the digitalization of value chains (UNCTAD, 2021). Moreover, one way to develop the computerized economy and increment computerized competitiveness is through drawing in remote coordinate venture (FDI). There's critical prove that FDI can bring innovation, know-how, jobs and development. Similar to conventional firms, advanced firms contribute overseas to be near to clients, get to nearby information, open unused markets and more. While some advanced benefit providers are generally "asset-lite", meaning they don't require noteworthy FDI to benefit a showcase, other computerized benefit providers show a comparable worldwide resource impression to non-digital multinational endeavours (Matthew, 2020).

3.4 Electronic payments and electronic transactions:

As digitalization continues to expand, an increasing number of businesses and consumers are seeking to conduct transactions entirely online, whether in commercial activities, interactions with government entities, or everyday tasks. To facilitate these digital transactions, it is essential for governments to formally acknowledge electronic transactions, documents, and signatures as being on par with traditional methods, while also establishing the requisite authentication systems. In this context, numerous governments are opting to provide electronic IDs or digital identities to individual businesses, institutions, and consumers (Satyanand, Foreign Direct Investment and the Digital Economy, 2021).

3.5 Health care (telemedicine):

The pandemic has significantly expedited the adoption of e-health services, particularly telemedicine. Doctor Anywhere in Singapore reported a nearly fourfold increase in business, alongside a ninefold surge in consultations for chronic medication refills during this period. In the first quarter of 2020, the company noted a 41 percent rise in signups for its video consultation service and an 89 percent increase in calls from Great Eastern insurance customers. Similarly, in Indonesia, Alodokter's telemedicine platform attracted 32 million visitors in March 2020, up from 20 million prior to the pandemic. Additionally, GrabHealth, a collaboration between Grab and Ping A Good Doctor, experienced a near doubling of daily consultations related to COVID-19, reaching 10,000 in March 2020 compared to 5,000 to 6,000 daily before the crisis.

3.6 Teleworking:

The pandemic forced many companies and employees to adapt to shift to remote work, e-commerce, and online education pushed firms and governments to invest heavily in digital technologies (Nordine , Mehdi , & Sahra , 2023)

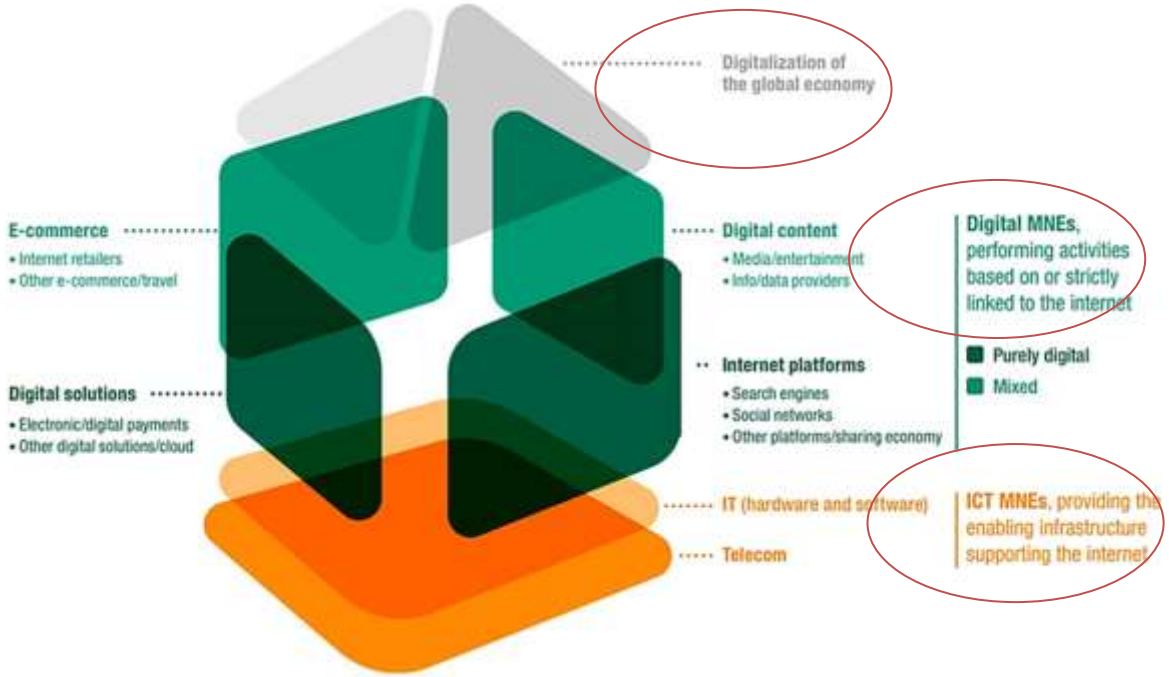
As a result, The demand for communication technologies, particularly services like Zoom, experienced a significant surge during the pandemic. In Indonesia, for instance, the need for digital applications that facilitate remote work escalated in the first half of

2020. Platforms such as Zoom, Microsoft Teams, and other office software, including Google Suite and Cisco WebEx, aided over 3,300 companies in Jakarta in adopting work-from-home strategies. PT Telekomunikasi Selular reported an astonishing 443 percent increase in the usage of online meeting applications like Zoom and Microsoft Teams, as well as Telkomsel CloudX. Additionally, the rise in e-learning applications, including Ruangguru, university e-learning centers, and Google Classroom, contributed to a remarkable increase in broadband traffic, with all three platforms experiencing usage spikes exceeding 5,400 percent. In Singapore, over 400 schools have been utilizing Zoom since the onset of the pandemic. (UNCTAD, 2021).

3.8 5G investment:

The enhancement of telecommunication infrastructure through the implementation of 5G technology, both stand-alone and non-stand-alone, will create new digital capabilities and investment opportunities. This advancement will expedite the integration of Industry 4.0 technologies. In addition to manufacturing, various sectors of the digital economy, such as e-commerce, cloud gaming, online healthcare, and smart cities, are anticipated to experience significant growth and development due to improved digital connectivity. (UNCTAD, 2021).

Figure N 4: Types of Investment (MNE's) in the digital investment



Source: Premila Nazareth Satyanand, promoting FDI in the Digital Economy (a brief introduction), National council of Applied Economic Research, New Delhi,2023.

4. How the pamdemic boosts the transformation to the digital economy In Algeria:

The pandemic has acted as a catalyst for the rapid evolution of Algeria's digital economy, mirroring trends observed in numerous countries worldwide. This transformation has been characterized by increased investments, enhanced infrastructure, and a notable rise in digital adoption across various sectors.

1. Government Support and Policies

A pivotal element of this shift is the support provided by the government through the establishment of legal frameworks and policies aimed at fostering electronic transactions and online business operations. Notably, the implementation of Law 15-05 in 2018 (Soumya, 2023). laid the groundwork for this digital transition, while initiatives such as the National Agency for the Promotion and Development of Technology Parks (ANPT) have been instrumental in promoting investment in digital infrastructure. In terms of infrastructure development (Messiliti , Benzaama, & Benzidane, 2019).

2. Infrastructure Development

In terms of infrastructure development, Algeria has made significant strides in expanding its fibre optic and broadband internet coverage, with the objective of achieving comprehensive nationwide connectivity (Messiliti , Benzaama, & Benzidane, 2019). The enhancement of mobile network capabilities has also played a crucial role, resulting in a substantial increase in connectivity, evidenced by over 45 million mobile phone users and an internet penetration rate surpassing 70% (Almi, 2025). These advancements have created a more conducive environment for digital services, enabling businesses and consumers to engage more effectively in the digital economy.

3. E-Commerce Boom and Digital Services Adoption

The pandemic has compelled both businesses and consumers to embrace digital solutions, including e-commerce, online banking, and digital payment systems. By 2020, approximately 16% of retail transactions in Algeria were conducted online, a notable increase primarily attributed to the restrictions imposed by pandemic (Soumya, 2023). This transformation prompted the government to implement tax incentives and regulatory frameworks aimed at fostering the growth of e-commerce (Soumya, 2023).

The Algerian e-commerce sector is characterized by prominent platforms such as Ouedkniss and Jumia (Iguenane, 2025), which illustrate the shifting consumer preferences towards online shopping. The number of e-commerce platforms and users has surged, largely influenced by the pandemic, which accelerated the digital transition (Khalfallah & Bendjelloul, 2023). These developments highlight the rapid evolution of e-commerce in Algeria, presenting both opportunities and challenges for the sector.

The e-commerce market in Algeria has witnessed significant expansion, particularly due to the changes in consumer behaviour brought about by the pandemic. Many consumers have increasingly opted for online purchases, leading numerous companies to

digitize their services (Group, 2025). However, a substantial portion of online transactions, approximately 95%, are still settled in cash upon delivery, posing logistical challenges (Algérie Presse Service, 2024). Efforts are being made to introduce new electronic payment options, such as instant payments through Electronic Payment Terminals (TPE) and contactless payments, to improve the digital payment landscape (Algérie Presse Service, 2024).

4. Rise in Digital Payments

The growth of digital payments has been remarkable, with electronic transactions soaring by 95% in 2022, resulting in revenues exceeding 16 billion DZD. This figure represents an astonishing 3,200% increase compared to levels prior to the pandemic (Soumya, 2023). The surge in digital transactions highlights a significant shift in consumer behaviour towards electronic payment methods as shown in table n2,

Table N 01: The quantity and value of online payment transactions in Algeria before and during the pandemic

Year	Transactions (Number)	growth %	Amount (DZD)
2016	7366.00	-	15009842.0200
2017	107844.00	1364.08	267993423.40
2018	176982	64.10	332592583.28
2019	202480	14.40	503870361.61
2020	459360	2168.85	5423727074.80
2021	7821346	70.25	11176475535.68

Source: Allali & others, Digital payments in Algeria, requirements for modernization after the pandemic, Journal of Economic integration, Vol 10, N 4, p 447.

The deployment of electronic payment devices, known as TPE, has also seen substantial growth, with installations doubling to reach 47,500 across the country. Furthermore, the introduction of mobile payments in November 2022 has proven successful, as evidenced by the rapid accumulation of over 7 million transactions within a short period. This trend indicates a growing acceptance of mobile technology in financial transactions (Soumya, 2023).

As of January 2024, the payment methods landscape indicates that merely 2.8% of the population owns a credit card, whereas 22.9% have a debit card. In 2023, 8.2% of people participated in online or mobile shopping, and 4.7% utilized digital platforms for money transfers (International Trade Administration, 2024). Ongoing initiatives aim to enhance the digital payment ecosystem by introducing instant payment options and contactless transactions, further efforts are underway to introduce new electronic payment methods, including instant payments via Electronic Payment Terminals (TPE) and contactless payments, to enhance the digital payment infrastructure (Algérie Presse Service, 2024).

5. Private Sector and Entrepreneurship Growth

Algeria's digital economy has witnessed remarkable expansion, fuelled by the collaborative efforts of entrepreneurs and the private sector. This growth reflects a dynamic environment where innovation is increasingly embraced, paving the way for a more robust economic landscape.

The Algerian government has introduced various initiatives aimed at strengthening the startup ecosystem. The establishment of the Algerian Startup Fund (ASF) addresses funding challenges by investing approximately $411 million in early-stage startups across the country's 58 provinces. Additionally, legislative reforms in 2020 modified the restrictive '51/49' rule, allowing for greater foreign investment, while the creation of a dedicated Ministry of Knowledge Economy, Startups, and Microenterprises highlights the government's commitment to fostering innovation (Hamza , Almi , & Boucenna , 2024).

These initiatives have led to significant advancements in the entrepreneurial landscape. Algeria now ranks second in Africa for active startups, with over 5,000 identified, including 1,100 that have received official recognition as startups or innovative projects. The rise in the number of incubators from 14 to 60 between 2020 and 2023 (Resilient Digital Africa, 2023), further illustrates this growth. Moreover, the private sector's increasing adoption of technology is creating new opportunities in areas such as ICT, e-commerce, and fintech, driven by rising internet penetration and a growing of Artificial Intelligence (AI) (International Trade Administration, 2024).

4.6. Foreign Direct Investment (FDI) in the Digital Economy

Algeria is making significant strides in enhancing its digital economy to attract Foreign Direct Investment (FDI). The government is focusing on improving digital infrastructure, fostering startup growth, and enacting regulatory reforms to create a favourable environment for foreign investors. These initiatives are designed to streamline investment processes and increase transparency, thereby making Algeria a more appealing destination for international capital.

The Algerian authority launched in February 2024 an electronic platform centralized online tool aimed at simplifying access to state-owned land for both domestic and foreign investors. This platform is intended to enhance transparency, minimize bureaucratic hurdles, and improve the overall investment climate in Algeria (UNCTAD, 2024). Such efforts are part of a broader strategy to modernize the investment framework and attract digital FDI by utilizing technology to foster a more investor-friendly environment (Saada, 2024).

The Investor's Digital Platform offers comprehensive access to information regarding available land, investment opportunities, incentives, and procedural requirements. Additionally, it enables users to submit applications and track their progress throughout

the evaluation and concession decision stages. This functionality not only enhances transparency but also significantly reduces bureaucratic delays, aligning with Algeria's goal of creating a more efficient and attractive investment landscape (aapi, 2025).

Therefore, the Digital Investment market in Algeria is witnessing notable growth and evolution. There is a marked shift in customer preferences towards digital investment platforms, driven by various trends that are propelling market expansion. Furthermore, unique local conditions and fundamental macroeconomic elements are playing a crucial role in the overall advancement of the Digital Investment sector.

A significant development in Algeria's digital investment landscape is the rise of robo-advisors, which utilize algorithms to deliver automated investment guidance and portfolio management. These platforms are becoming increasingly popular among customers seeking cost-effective investment solutions and tailored strategies. Additionally, the growing use of mobile investment applications is noteworthy, as the proliferation of smartphones and internet access encourages customers to utilize these apps for their investment activities. Mobile applications provide a convenient means for users to track their investments, execute trades, and obtain real-time market data, particularly appealing to younger, tech-savvy investors who favour managing their finances on the move (statista, 2025).

4.7 Remote working and E-education

Distance education in Algeria has experienced notable advancements, particularly due to the pandemic, which prompted a swift transition from conventional classroom instruction to online learning environments. The e-education sector is progressing, with initiatives aimed at incorporating digital resources into the educational system. Notably, companies like STREAMVISION have become influential in Algeria's e-learning domain, offering adaptable platforms that cater to various learner levels and schedules, featuring video courses across multiple subjects and languages (streamvision, 2023). Each university in Algeria has implemented its own e-learning platform, with Moodle being the predominant choice, enabling students to access course materials, communicate with instructors, and engage with peers (Djamaleddine , 2023). Additionally, international partnerships, such as a European twinning project between Spain and Algeria, are fostering the development of virtual tools to enhance education, which includes training educators in modern teaching technologies, including the integration of social networks and the establishment of virtual learning environments (fiap, 2021).

4.8 Internet and Mobile Connectivity

Since the beginning of the pandemic, Algeria has made significant progress in improving its internet and mobile connectivity. The current situation is highlighted by recent statistics. As of December 31, 2023, the mobile telephony penetration rate in Algeria reached 116.5%, an increase from 111.05% at the end of 2022, indicating a rise

in mobile subscriptions relative to the population. The overall count of mobile subscribers increased by 5.11%, climbing from 49 million in December 2022 to 51.52 million by the conclusion of 2023. Mobilis holds the leading position in the market with 22.51 million subscribers, while Djezzy follows with 15.89 million, and Ooredoo has 13.10 million subscribers. (Algeriainvest, 2024). In terms of internet connectivity, Algeria has seen a substantial increase in Fiber-to-the-Home (FTTH) connections, with 1.5 million households connected as of October 2024, representing a remarkable 2,730% increase since November 2020. By March 31, 2024, there were 48.85 million mobile internet subscribers, with 44.26 million using 4G services, highlighting the prevalence of mobile internet in the country (ecofinagency, 2024).

Algeria is also preparing for the rollout of 5G technology, with Ooredoo actively modernizing its network in Algeria through strategic partnerships aimed at enhancing its telecommunications infrastructure. In March 2023, the company collaborated with Nokia to upgrade its Radio Access Networks and establish new sites in Algeria and Tunisia, utilizing Nokia's energy-efficient Air Scale technology to support a range of radio technologies from 2G to 5G, along with massive MIMO Adaptive Antennas for improved coverage (Geospatial world, 2023). Furthermore, In early 2024, Ooredoo established a partnership with Huawei to enhance its core network to 5.5G in several markets, including Algeria and Tunisia. This modernization is anticipated to elevate service quality and facilitate the commercial rollout of 5G and 5.5G technologies, thereby enhancing Ooredoo's competitive position in response to the increasing demand for high-speed connectivity (African wireless communications, 2024).

4.9 Financial inclusion

Although mobile broadband connectivity is widespread, the adoption of digital financial services in Algeria remains significantly low. Only 16% of adults and 11% of women engage in digital payments, which is considerably less than the averages observed in the broader MENA region (Delort & Isabelle , 2021). As of January 2024, merely 2.8% of the population held a credit card, while 22.9% had a debit card. In 2023, only 8.2% of individuals made purchases through mobile phones or the internet, and 4.7% utilized digital methods for money transfers (International Trade Administration, 2024).

4.10 Challenges and Future Prospects

Regulatory obstacles and bureaucratic processes continue to impede digital investment, while a predominant reliance on cash-on-delivery, which accounts for 95% of transactions, restricts comprehensive digital adoption. Financial inclusion remains low, with only 2.8% of the population possessing a credit card as of 2024 (Algérie Presse Service, 2024).

Additionally, rural regions suffer from insufficient internet access and a lack of digital literacy. Despite some advancements, persistent bureaucratic hurdles and regulatory

challenges hinder the acceleration of investment. The absence of widespread e-commerce and electronic payment systems further complicates the situation.

Experts recommend that the government incorporate digital economy strategies into broader economic policies to improve efficiency and attract investment. The pandemic has highlighted vulnerabilities, such as inadequate internet access in rural areas and insufficient digital literacy among businesses.

Algeria's digital transformation still lags behind neighbouring countries due to these regulatory challenges and the slow adaptation of traditional businesses. Furthermore, while there have been improvements, significant issues remain, including the necessity for enhanced internet infrastructure and the establishment of consumer trust in online transactions, which requires bolstering transaction security and implementing data protection measures (Group, 2025).

5. CONCLUSION:

The digital economy is significantly reshaping the global economic landscape, heralding a Fourth Industrial Revolution that is poised to disrupt the established economic framework, particularly in the aftermath of the pandemic, which has catalysed investments across various sectors such as e-government, e-commerce, e-transactions, remote work and education, telemedicine, online streaming, and 5G technology. To foster growth in the digital economy and enhance digital competitiveness, attracting foreign direct investment (FDI) is essential; however, this endeavour necessitates tailored policies and regulations due to the unique business models of digital enterprises compared to traditional businesses.

Algeria has achieved notable advancements in digital investment, marked by increasing participation from both the state and private sectors. To further accelerate this investment, it is essential to strengthen regulatory frameworks, attract more foreign direct investment, and enhance infrastructure development. The pandemic has significantly propelled digital investment in Algeria, especially in areas such as e-commerce, digital payments, and remote work technologies. Nonetheless, to maintain this momentum and fully integrate into the global digital economy, it is imperative to tackle existing structural and regulatory challenges. In conclusion, the pandemic has been a driving force behind Algeria's digital transformation, resulting in heightened investments in digital infrastructure, services, and regulatory improvements. While considerable progress has been made, it is vital to address the ongoing challenges to fully leverage the potential of the digital economy for sustainable growth. The pandemic has necessitated a swift transition to digital services, broadened internet access, and boosted e-commerce activities. However, for enduring advancement, Algeria must refine its regulatory landscape, promote financial inclusion, and continue to develop its digital infrastructure.

Nonetheless, this study has its limitations; the bibliometric analysis presented is not exhaustive, and while it highlights the emerging nature of this research area, it lacks sufficient discussion on the impact of pandemic on business within the economics and business fields (Cui & Yan, 2023).

6. References

1. aapi. (2025, 01 05). *Presentation of the Investor's Digital Platform*. Retrieved from aapi: https://aapi.dz/en/plateforme-numerique-de-linvestisseur-en/

2. African wireless communications. (2024, 04 03). *Huawei to modernise Ooredoo’s networks across Tunisia and Algeria to 5.5G*. Retrieved from African wireless communications: https://www.africanwirelesscomms.com/news-details?itemid=7454&post=huawei-to-modernise-ooredoos-networks-across-tunisia-and-algeria-to-55g-486408&utm_source=chatgpt.com

3. Alan, A., Sinkovics, N., & Sinkovics, R. (2023). E-commerce Policy and the Global Economy. *Management International Review*, 28–57.

4. Alexandre , D., & Shelley , m. (2021). *INVESTMENT PROMOTION AND THE DIGITAL ECONOMY: A COMPARATIVE ANALYSIS OF INVESTMENT PROMOTION PRACTICES ACROSS THE OECD.* Paris: OECD Investment Insights.

5. Algeriainvest. (2024, 04 13). *Mobile Telephony in Algeria: Penetration rate of 116.5% in 2023*. Retrieved from algeriainvest: https://algeriainvest.com/AlgeriaIC/public/premium-news/telephonie-mobile-en-algerie-taux-de-penetration-de-1165-en-2023?utm_source=chatgpt.com

6. Algérie Presse Service. (2024, 09 26). *Algerian e-commerce market tops USD$1.5 billion*. Retrieved from https://www.aps.dz/economie/176547-le-marche-du-e-commerce-en-algerie-a-depasse-1-5-milliard-de-dollars

7. Almi, H. (2025, 03 08). *The reality of digital economy*. Retrieved from University of Annaba: https://elearning-facsceg.univ-annaba.dz/pluginfile.php/24164/mod_resource/content/1/the%20reality%20of%20DE%20in%20Algeria.pdf#:~:text=3.2%25%20of%20Algeria's%20GDP%20comes,broadband%20subscriptions%20per%20100%20inhabitants.&text=Finally%2C%20the%20skil

8. Bessouyah , M., & Yassine, M. (2024). The impact of digital economy indicators on foreign direct investment in over the period of (2000-2022). *Review of Socio-Economic Perspectives, 9*(1), 135-148.

9. Chaisse, J. (2023). ‘The Black Pit:’ Power and Pitfalls of Digital FDI and Cross-Border Data Flows. *World Trade Review*, 73–89.

10. Cui, C., & Yan, Z. (2023). Does the Digital Economy Promote Domestic Non-Tradable Sectors?: Evidence from China. *Sustainability*, 1-23.

11. Cutean, A., Akshay, K., & Ye, Z. (2022). *Attracting FDI Toward Canada’s Digital Economy.* Ottawa, Canada: Information and Communications Technology Council (ICTC).

12. Delort, D., & Isabelle , P. (2021). *How digital financial services can provide a path toward economic recovery in Algeria.* New York: world Bank blogs.

13. Deng, L., & Wang, H. (2021). *Digital Economy and the Employment Effect of Inward FDI in China.* Navarra, spain: Core China Research.

14. Djamaleddine , N. (2023). Le e-learning à l'ère de la covid 19 à l'université algérienne : état des lieux, défis et perspectives. *Multilinguales*(20), 2-17.

15. ecofinagency. (2024, 10 15). *Algeria: Households Connected to Fiber Internet Surge by 2730% in Four Years*. Retrieved from ecofinagency: https://www.ecofinagency.com/telecom/1510-46019-algeria-households-connected-to-fiber-internet-surge-by-2730-in-four-years

16. EVITA , F., & ELLYSSE, D. (2021). *Attracting Foreign Direct Investments Through Augmented and Virtual Reality*. Washington D.C: EVITA FELDBERGA AND ELLYSSE DICK.

17. fiap. (2021, 04 12). *Tools for digitising education in Algeria*. Retrieved from fiap: https://www.fiap.gob.es/en/noticias/tools-for-digitising-education-in-algeria/?utm_source=chatgpt.com

18. Geospatial world. (2023, 02 03). *Ooredoo Group selects Nokia to Deploy 5G in Algeria & Tunisia*. Retrieved from Gw Prime: https://geospatialworld.net/news/ooredoo-group-selects-nokia-deploy-5g-algeria-tunisia/?utm_source=chatgpt.com

19. Group, D. (2025, 11 10). *The digital market in Algeria : an opportunity to seize*. Retrieved from https://www.groupediaval.com/2024/11/10/the-rise-of-the-digital-market-in-algeria-an-opportunity-to-seize-2/?utm_source=chatgpt.com

20. Hamza , Z., Almi , H., & Boucenna , W. (2024). Startup Development in Algeria: Navigating Challenges and Seizing Opportunities. *Journal of Economic Integration, 12*(04), 240-259.

21. Hassiba, A. (2025, 08 03). *The reality of digital economy*. Retrieved from university of Annaba: https://elearning-facsceg.univ-annaba.dz/pluginfile.php/24164/mod_resource/content/1/the%20reality%20of%20DE%20in%20Algeria.pdf#:~:text=3.2%25%20of%20Algeria's%20GDP%20comes,broadband%20subscriptions%20per%20100%20inhabitants.&text=Finally%2C%20the%20skil

22. Hintošová, A. B. (2021). The Digital Economy in the Context of Foreign Direct Investment Flows. In I. A. Boitan, & K. M. Bartkowiak , *Fostering Innovation and Competitiveness With FinTech, RegTech, and SupTech* (pp. 210-228). Beijing: IGT Global.

23. Iguenane, B. (2025, 02 16). *Pourquoi le e-commerce en Algérie connaît un succès inattendu en 2025*. Retrieved from webdigital: https://www.webdigital.info/pourquoi-le-e-commerce-en-algerie-connait-un-succes-inattendu-en-2025/?utm_source=chatgpt.com

24. International Trade Administration. (2024). *Digital Economy*. Washington, DC: International Trade Administration.

25. Jarosław , B., & Magdalena , T. (2022). Analyzing the Level of Digitalization among the Enterprises of the European Union Member States and Their Impact on Economic Growth. *Journal of Open Innovation*, 8-36.

26. khalfallah, H., & bendjelloul, k. (2023). The reality of digital transformation in Algeria: an analysis of international indicators. *Journal of Economic & Financial Research, 10*(01), 776-802.

27. Lall, S. (2000). *Export performance, technological upgrading and foreign direct investment strategies in the Asian newly industrializing economies with special reference to Singapore.* Santiago, Chile: United Nations Publication.

28. Le Thanh, H., & Nguyen, T. H. (2022). Impacts of digitalization on foreign investments in the European region during the COVID-19 pandemic. *DEVELOPMENT STUDIES RESEARCH, 9*(1), 177-191.

29. Maiti, M., & Kayal, P. (2017). DIGITIZATION: ITS IMPACT ON ECONOMIC DEVELOPMENT & TRADE "WITH SPECIAL REFERENCE TO SERVICES AND MSME SECTOR OF INDIA. *Asian Economic and Financial Review*, 541-549.

30. Matthew, S. (2020). *Digital FDI Policies, regulations and measures to attract FDI in the digital economy.* Geneva: World Economic forum White Paper.

31. Messiliti , N., Benzaama, S., & Benzidane, H. (2019). The digital economy in Algeria-opportunities and prospects-Economie numérique en Algérie - opportunités et perspectives. *Finance and Business Economics Review JFBE, 3*(1), 38-57.

32. Moukil , S., & Attallah , L. (2021). Digital FDI and economic recovery post-covid-19 pandemic: the case of the United Kingdom. *Finance and Business Economics Review, 5*(3), 362-374.

33. Nordine , A., Mehdi , E., & Sahra , S. (2023). Digitalization and resilience during the COVID-19 pandemic. *Telecommunications Policy*(47), 2-19.

34. Peng, C., Yang, S., & Jiang, H. (2022). Does digitalization boost companies' outward foreign direct investment? *Frontiers in Psychology*, 1-19.

35. Resilient Digital Africa. (2023, 10 10). *Active startups : Algeria in the big leagues*. Retrieved from https://resilient.digital-africa.co/en/blog/2023/10/10/active-startups-algeria-in-the-big-leagues/?utm_source=chatgpt.com

36. Saada, H. (2024, 06 26). *Algeria's Strides in Digital Transformation, Intelligent Services: Revolutionizing Public Services for a Brighter Future*. Retrieved from dzair: https://www.dzair-tube.dz/en/algerias-strides-in-digital-transformation-intelligent-services-revolutionizing-public-services-for-a-brighter-future/

37. Satyanand, P. (2021). *Foreign Direct Investment and the Digital Economy.* Bangkok: ASIA-PACIFIC RESEARCH AND TRAINING NETWORK ON FDI.

38. Satyanand, P. (2023). *Promoting FDI in the Digital Economy A brief introduction.* New Delhi: National council of Applied economic research.

39. Souhaila, K., & Youssra, B. (2022). Impact of government responses to COVID-19 on the resilience of FDI attractiveness factors in the Asian region. *Journal of Economic and Administrative Sciences, 40*(1), 37-56.

40. Soumya, H. (2023). The digital economy in Algeria - prospects and challenges. *Journal of Contemporary Business and Economic Studies, 6*(2), 174-187.

41. statista. (2025, 01 10). *Digital Investment - Algeria*. Retrieved from statista: https://www.statista.com/outlook/fmo/wealth-management/digital-investment/algeria

42. Stephenson, M. (2022). *TOWARDS TWO-WAY DIGITAL FDI: FACILITATING DIGITAL INVESTMENT FLOWS BETWEEN ECONOMIES.* Jakarta: T20 indonesia.

43. streamvision. (2023, 09 25). *STREAMVISION, a key e-learning player in Algeria*. Retrieved from streamvision: https://www.streamvision.com/en/press/press-releases/streamvision-a-key-e-learning-player-in-algeria?utm_source=chatgpt.com

44. Techpression. (2024, 12 30). *Algeria unveils strategy to boost digital economy with 500+ projects*. Retrieved from https://techpression.com/algeria-unveils-strategy-to-boost-digital-economy?utm_source=chatgpt.com

45. Unctad. (2019). *Digital economy Report.* New York: UN trade and development.

46. UNCTAD. (2021). *ASEAN Investment Report 2020–2021 Investing in Industry 4.0.* Jakarta: ASEAN Secretariat.

47. UNCTAD. (2024, 02 08). *Launched a digital platform to streamline access to State-owned land for investors.* Retrieved from Investment Policy Hub: https://investmentpolicy.unctad.org/investment-policy-monitor/measures/4857/algeria-launched-a-digital-platform-to-streamline-access-to-state-owned-land-for-investors-?utm_source=chatgpt.com

48. Zhang, J., & Shang, Y. (2022). The Influence and Mechanism of Digital Economy on the Development of the Tourism Service Trade—Analysis of the Mediating Effect of Carbon Emissions under the Background of COP26. *Sustainability*, 1-21.

49. Zhao, S., Zhang, Y., Iftikhar, H., Ullah, A., Mao, J., & Wang, T. (2022). Dynamic Influence of Digital and Technological Advancement on Sustainable Economic Growth in Belt and Road Initiative (BRI) Countries. *Sustainability*, 1-17.

50. Zhu, Z., & Xie, H. (2022). What Do We Know and What Do We Need to Know about COVID-19's Implications on Business Economics? From Bibliometric Analysis to a Conceptual Framework. *Sustainability*, 1-16.