

The digital economy in Algeria : prospects and challenges

Dr Derbal soumeia * ¹, Dr Ben Lamoudi djalila ², Dr Boussouek amel³

¹ University of Eloued (Algeria), derbal-soumeia@univ-eloued.dz

² University of Ouargla (Algeria), djalilabenLamoudi@yahoo.fr

³ University of Eloued (Algeria), amel-boussouak@univ-eloued.dz

Abstract:

Over the past two decades, the digital economy has emerged as a key driver of growth, productivity, and competitiveness for businesses and nations alike. Algeria, like many countries worldwide, has embraced digital transformation as a strategy to diversify and strengthen its economy. The foundations for a digital economy in Algeria were laid in the 2000s, notably with the enactment of Law No. 2000-03 on August 5, 2000, which established general regulations for postal and telecommunications services. This law aimed primarily at fostering competition within the telecommunications sector.

This research adopts an analytical-descriptive approach to explore the subject matter. Concepts are first presented descriptively and subsequently analyzed to achieve the study's primary objective: evaluating the integration of digitization into Algeria's economic activities. By examining the theoretical and practical dimensions of this integration, the study aims to highlight Algeria's efforts to align with emerging and developed countries in leveraging technological advancements in information and communications

Keywords: Digitization, E-commerce, E-marketing, Digital Technologies.

* *Dr Derbal soumeia.*

1. INTRODUCTION

The global economy is undergoing a rapid digital transformation, reshaping industries and redefining growth trajectories at an unprecedented pace. Some of the world's largest companies—Microsoft, Google, Facebook, and Amazon—are at the forefront of this digital revolution.

The digital economy serves as a powerful driver of creativity and diversification in commercial practices. The adoption of the internet and its associated activities, including information and communication technologies, has given rise to new products, services, jobs, businesses, and even entire markets. This marks a shift from an industrial economy to an information-based economy, where the focus has transitioned from producing goods to generating and leveraging information.

This research explores the concept of the digital economy and examines its adoption in Algeria. It seeks to address the primary question: **What are the prospects and challenges of transitioning to a digital economy in Algeria?**

To answer this question, the research is organized into the following key areas:

- The digital economy: concepts and theoretical frameworks.
- The digital economy in Algeria: digital payment systems and Big Data as foundational pillars of the digital revolution.

The digital economy refers to conducting or facilitating economic activities electronically. It is based on the electronic processing, storage, and transmission of information and includes activities that rely on enabling physical infrastructure and software.

2. The Digital Economy : concepts

2.1. Characteristics of the Digital Economy

The digital economy possesses several defining characteristics, including (McKinsey & Company ,P 25):

- **Ease of access to information:** The growth and success of the digital economy depend on the ability of individuals and organizations to participate in information networks and online platforms. This requires active engagement and robust infrastructure to support such participation.
- **Market structure transformation:** Market dynamics within the digital economy change based on the degree of adoption and application of

information and communication technologies (ICT) at both local and global levels.

- **Openness:** As an open economy, it removes barriers to entry, allowing anyone with the necessary knowledge and awareness to engage in digital activities.
- **Borderless nature:** The digital economy transcends traditional boundaries, reducing the relevance of physical borders and diminishing the applicability of existing laws and regulations.
- **Shift from lifelong employment to lifelong learning:** In the age of knowledge, the focus has moved from stable, lifelong employment to continuous education and skill development.
- **High-speed economy:** The digital economy operates at remarkable speed, utilizing tools such as satellites and email to facilitate rapid communication and transactions.

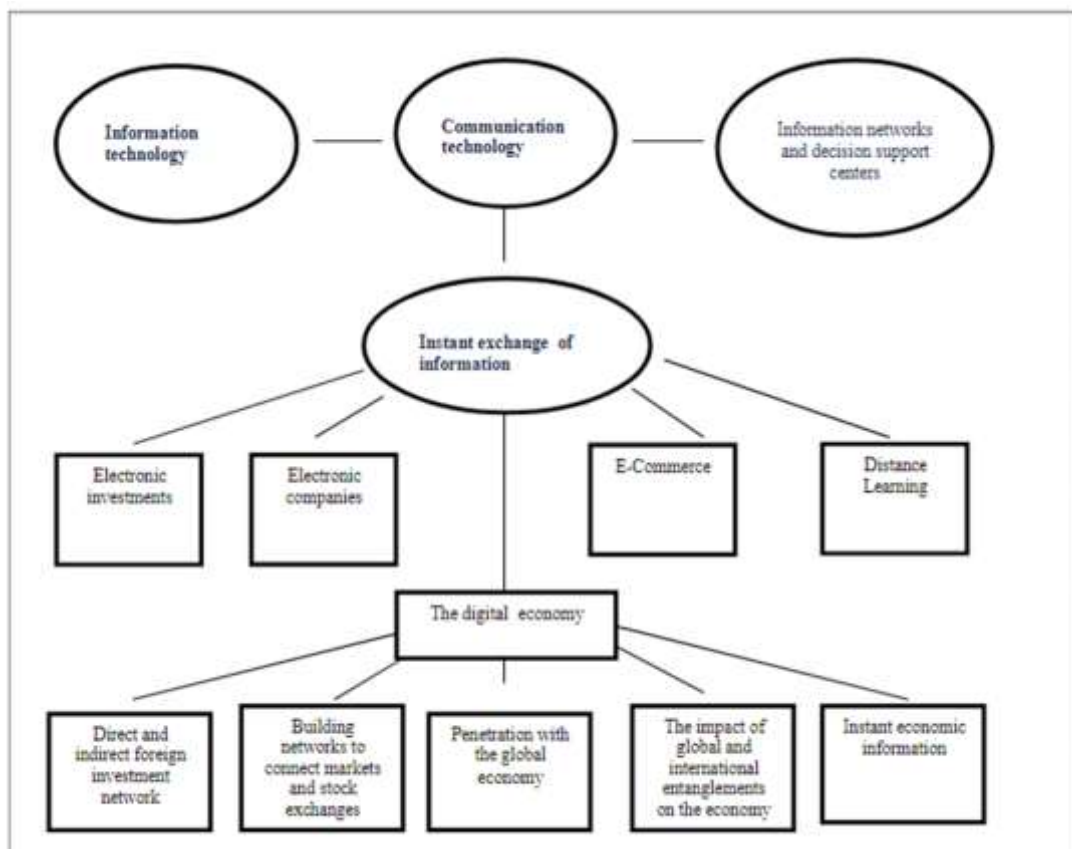
2.2. Components of the Digital Economy

The digital economy, as a comprehensive system, consists of interconnected elements that collectively drive its efficiency. These components include(farid. P 65):

- **Digital products:** A defining feature of the digital economy, digital products encompass not only software, music, and video but also digital books, newspapers, magazines, and services like travel booking, banking, electronic currencies, and government services. Digital products are highly customizable to customer preferences and are distinguished by low variable costs and high fixed costs, making them some of the most profitable products in the economy.
- **Consumers:** The digital economy boasts a vast pool of potential consumers. Anyone with internet access becomes a prospective customer, capable of searching, selecting, and even negotiating for goods and services available online.
- **Digital Commodities:** The digital economy offers a vast variety of commodities, providing consumers with significant freedom of choice. This enables customers to explore, select, and compare products conveniently.
- **Sellers:** Sellers in the digital economy include any institution or organization showcasing their products online. Marketing, promotion, and

advertisements are conducted electronically, especially for intangible or virtual goods such as those offered by platforms like Amazon.com and Yahoo. The digital marketplace is highly flexible, characterized by unrestricted entry and exit, as no barriers prevent participation.

- **Infrastructure Organizations:** These are entities responsible for developing and maintaining the core infrastructure that supports the digital economy. Their role includes providing software, hardware, and communication networks, as well as creating investment opportunities to ensure the digital ecosystem operates efficiently and with high quality.
- **Regulations and Laws:** The digital economy requires the establishment of comprehensive laws and regulations to minimize negative impacts and safeguard both consumers and employees. These measures ensure ethical practices, secure transactions, and the overall stability of the digital economic environment.



Source: Farid Ragheb Al-Najjar, Investing in Digital Systems, Digital Economy and Digital Economy, University Youth Publisher, Egypt, 2004,p 16

2.3. The Difference Between the Digital Economy and the Traditional Economy

The primary and most evident distinction between the traditional and digital economies lies in their utilization of technology. The digital economy relies entirely on information technology and advanced communication tools, whereas the traditional economy retains its routine, often complex, processes.

Several characteristics highlight the superiority of the digital economy over its traditional counterpart(ali khelene, p 13):

- **Speed and Flexibility:** The digital economy operates without being constrained by time or place. It enables individuals to conduct commercial transactions seamlessly, regardless of location or timing. Transactions in the digital economy are executed with exceptional speed and efficiency,

unlike the slower, more rigid processes of the traditional economy.

- **Digital Nature:** Unlike the traditional economy, where transactions are typically physical and paper-based, the digital economy processes all information in digital form. Transactions are encoded as digital data, instantly understood and translated by software, making operations smooth and error-free.
- **Knowledge-Driven:** The digital economy is entirely knowledge-based. Unlike the traditional economy, where minimal technical knowledge might suffice, succeeding in the digital economy requires familiarity with digital technology fundamentals. This includes understanding the principles of e-commerce and the strategies for launching and managing successful online ventures.
- **Open Market:** The digital economy thrives on transparency and openness. It allows individuals to easily identify competitors, understand the strategies used by major players to attract customers, and stay informed about new services and offers. Unlike the traditional economy, where isolation from global trends is common, the digital economy provides access to real-time information about industry developments with just a simple search.

3. Benefits of the Digital Economy

The digital economy offers substantial benefits, particularly for emerging economies. It presents significant opportunities to enhance competitiveness and productivity by facilitating access to digital products and services that optimize processes and production. Additionally, it helps reduce transaction costs and revolutionize supply chains.

The declining costs of information and communication technology (ICT) have further accelerated the adoption of digital technologies in emerging markets. This trend encourages investment in digital infrastructure, enabling businesses to access advanced services at competitive prices, thus fostering economic growth and innovation.

This enables companies to integrate into global value chains and directly reach customers in international markets—an opportunity that was previously available only to large corporations based in developed

economies(hashim, p79).

The digital economy also brings significant advantages to e-marketing and e-commerce functions, as highlighted by various authors:

- **Marketing and Managerial Costs:** The digital economy reduces the costs associated with marketing strategies. These strategies, often designed for extended periods, can reach thousands of internet users, including "e-shoppers" and those seeking immersive online experiences. Consumers are no longer passive; they actively engage in the consumption process and appreciate being involved. The internet serves as a powerful tool, enabling users to view, evaluate, and purchase products with ease.
- **Marketing and Customers:** The internet provides continuous and unrestricted access to products, ensuring their availability to consumers at all times. A company or product with an online presence has countless opportunities to be discovered by users, 24/7. This visibility encourages businesses to establish a digital presence, enhancing trust and credibility among consumers. It also helps expand the customer base by removing physical and geographical barriers, creating global opportunities for businesses.
- **Marketing and Product Evaluation:** The digital economy allows businesses to objectively evaluate the performance of products in the cyber market. Unlike traditional campaigns, where success is often gauged by sales revenue, digital marketing employs analytical tools to gather precise statistics. These include metrics like unique visits, repeat visits, and click-through rates on advertisements, offering valuable insights into product performance.
- **Wealth Strategy and Development:** Information technologies significantly enhance productivity across industries and services. Economists emphasize that sharing knowledge, leveraging it within businesses through network development, and collecting and processing customer data have become central to the process of wealth creation. These activities form the foundation for strategic growth and long-term success in the digital economy.

The majority of businesses utilize digital products, positioning them as key participants in shaping the standards and platforms that facilitate the operation and use of digital products and cross-border trade.

Countries where companies actively develop platforms and manage digital technologies gain the most from the digital economy. These nations experience enhanced long-term growth prospects, increased productivity, and improved competitiveness. Their populations and businesses benefit significantly from the indirect effects of a more prosperous, open, and innovative environment.

Companies like Google, Amazon, Apple, Microsoft, Facebook, Baidu, Alibaba, SAP, PayPal, AT&T, Uber, Tencent, Cisco, Oracle, Huawei, Siemens, and others are at the forefront of developing digital platforms and devices. These companies operate within predefined standards and frameworks.

The shortening of technology lifecycles, combined with network and platform effects, has created a highly asymmetric "win-win" model. In this model, "superstar" companies maintain significant competitive advantages, keeping them far ahead of the users of their digital products.

4. The Digital Economy in Algeria

The term "digital economy" encompasses all economic activities related to digital technologies. It highlights the interconnectedness of economic activities within the economic circuit, encompassing the production, distribution, intermediation, and consumption of informational goods and services that are digitized, reproducible, and often transmissible at minimal cost.

The digital economy is not confined to a single industry or sector. It spans economic, social, cultural, and technological domains that rely on the use of information and communication technologies (ICTs), involving both producers and users. To keep pace with global trends, nations, including Algeria, must expand the application of various digital tools and techniques. This includes implementing solutions tailored to socio-economic conditions to manage the exponential growth of data—commonly referred to as "Big Data"—and ensuring effective storage on digital databases.

Additionally, Algeria must adopt regulatory and policy measures to facilitate the widespread use of electronic payment systems, which have become a hallmark of the modern global economy.

Before delving into the specific uses of the digital economy in Algeria, we will first explore Algeria's classification within the digital economy based on the

indices reported in *The Global Information Technology Report*.

4.1. Digitization of the Economy in Strategic Sectors

The digitization of the economy is a gradual and lengthy process, particularly in countries grappling with entrenched bureaucracy, where a culture of information retention often intersects with clientelism. Digitization, which fundamentally challenges these practices, has gained traction in many strategic sectors in Algeria over the past two to three years. This progress has been driven by proactive policies initiated directly by at least three ministerial departments and supported indirectly by others.

According to data from Gie Monétique, approximately 99% of mobile payment transactions in Algeria are currently directed toward the telecommunications sector, processed via the payment platforms of Algérie Poste and fixed or mobile telephone operators.

However, there are promising signs of diversification in the near future. The Algerian government has introduced a series of measures to promote the development of e-commerce and online payment systems. These initiatives include tax incentives and support for establishing e-commerce platforms, as outlined in Law 15-05, enacted on May 10, 2018.

Algerian consumers are increasingly adopting electronic payment technologies. According to a report published by McKinsey & Company at the end of 2020, approximately 16% of retail transactions in Algeria were conducted online. This shift was partly driven by the COVID-19 pandemic, which prompted consumers to embrace online shopping.

The digitization of the economy presents numerous advantages across all sectors, particularly in strategic areas such as energy, health, transport, and defense. Implementing a comprehensive digitization strategy is essential to harness these benefits effectively.

4.2. Aspects of Using the Digital Economy in Algeria Digital Economy Statistics

The ICT and digital sector in Algeria is marked by its rapid evolution and strategic importance. Producing statistics and indicators to measure and monitor the integration of digital technologies has become a priority for the Algerian state. This focus enables self-assessment and continuous improvement, enhancing citizen services and improving Algeria's global ranking across various indicators.

Two primary sources of data can be identified: data providers and data producers.

- **Data Providers:** These include the Algerian administration and companies operating in the ICT sector. They periodically supply a range of statistical indicators, such as:
 - Turnover and investments of telecom operators.
 - Evolution of ICT infrastructure.
 - Access to ICT by households and businesses.
 - ICT usage by households.
 - Number of ICT companies and start-ups.
 - Foreign trade in ICT goods.
 - Employment within the ICT sector.

Many of these statistics are publicly accessible on the websites of the Ministry of Post, Telecommunications, Technologies, and Digitization (<https://www.mpttn.gov.dz/>) and the Post and Electronic Communications Regulatory Authority (<https://www.arpce.dz/>).

- **Data Producers:** The primary data producer is the National Statistics Office (ONS), which plays a central role. Additionally, various administrative bodies may engage the ONS or specialized consultancies to conduct sample surveys to meet their specific needs.

The Ministry of Post, Telecommunications, Technologies, and Digital conducted surveys in 2008 to assess access to and usage of ICTs among households and government administrations (ministries). These surveys were part of the preparation for the "e-Algeria" strategy. Additionally, in 2010, the Ministry undertook a nationwide census of ICT companies covering the entire national territory.

In 2011, the National Statistics Office conducted Algeria's first economic census, which included all establishments operating from fixed locations. A portion of the census questionnaire was specifically dedicated to questions related to ICT.

4.2.1. Electronic Payment in Algeria

Electronic payment refers to the use of digital tools and techniques for conducting various commercial and economic transactions involving goods or services. These payments rely on internet-based systems and adhere to security protocols and eligibility procedures tailored to each payment method to ensure stakeholder satisfaction.

The primary methods of online payment include:

- **Bank cards** (Visa, MasterCard, Euro Card, etc.)
- **Electronic checks**
- **Electronic currencies** (e.g., E-cash, Digicash, Millicent)
- **Payments via intermediary accounts** (e.g., KLELine: Klebox)
- **Next-generation internet payment services**

In Algeria, the journey toward digital payments began with the development of monetics and the establishment of SATIM (*Company for the Automation of Interbank Transactions and Electronic Banking*), the country's technical operator for monetics. The first electronic payment terminals were introduced in 2005, following the creation of the first ticket vending machines in 1997.

Despite this progress, sophisticated electronic payment methods remain in their early stages, with many of the aforementioned technologies yet to be fully implemented. The bank card has emerged as the most widely used electronic payment tool in recent years, particularly following the introduction of online payment in 2015, which has laid the groundwork for the digitization of economic activities in Algeria.

The bank card has gained prominence as a promising commercial tool, especially with the enactment of the 2018 Finance Law, which mandated its adoption in specific sectors.

4.2.2. Big Data in the Algerian Electronic System

Drawing from various sources, Big Data is recognized as a strategic priority of the highest order. It represents a transformative force for nations and serves as a valuable resource for marketing managers. Big Data involves analyzing vast, complex, and diverse datasets to uncover hidden correlations, market trends, customer preferences, and other actionable insights to support companies in making informed decisions. This concept gained prominence in 2012 as businesses faced the challenge of managing increasingly large volumes of data to support their managerial, commercial, and marketing activities.

With the rapid growth of Big Data, businesses are seeking skilled professionals who can turn massive datasets into meaningful information. Data analysts are expected to play a critical role in driving key commercial initiatives. For instance, in the United States, there were an estimated 2.7 million job postings for data analysis and scientific roles by 2020 (New Horizons Worldwide, LLC, January 2018). A significant portion (59%) of this demand came from the finance,

insurance, professional services, and IT sectors.

In Algeria, the importance of Big Data has been acknowledged in regulatory frameworks designed to safeguard confidential, personal, and interpersonal information. The *Law on the Protection of Natural Persons in the Processing of Personal Data* (Law No. 18-07, June 10, 2018) defines "personal data" as any information, regardless of format, related to an individual. This includes data processed by reference to an identification number or specific aspects of identity—be it physical, physiological, genetic, biometric, psychological, economic, cultural, or social.

Given advancements in technology, the effective processing and storage of data have become essential, alongside modern digital applications. Algerian companies must address the challenges of intense competition both now and in the future. The government is also focusing on the concept of open data as part of its digital strategy.

4.2.3. Expectations for Government Measures to Boost the Start-up Movement

The measures recently announced by the Algerian government to develop the start-up ecosystem carry significant expectations. These initiatives are designed to accelerate the digital transformation of the economy, with a focus on strengthening key sectors such as financial services, health, agriculture, and education. The aim is to foster innovation and enhance digital technology skills, which are crucial for driving economic growth.

The financial sector has seen remarkable progress, highlighted by the introduction of new digital financial services and the growing adoption of these tools. Online financial transactions increased by 95% in 2022, generating revenues exceeding 16 billion DZD—a staggering growth of 3,200% compared to pre-COVID levels. In the area of electronic payments, the number of electronic payment devices (TPEs) installed across the country doubled post-pandemic, reaching 47,500 devices. Transactions processed through these devices exceeded 21 billion DZD, marking a 71% increase compared to pre-pandemic levels.

Mobile payments, which are currently limited to bank customers, officially launched in November 2022. Despite its recent introduction, this payment method has already recorded more than 7 million transactions and generated revenues exceeding 6.5 billion DZD.

Conclusion

At the international level, digital and computer networking technologies not only enhance the economic efficiency of financial institutions and companies but also introduce a new form of virtual and digital markets. These markets present an example of a near-perfect market, prompting the need for a deeper re-evaluation of the assumptions and outcomes derived from studies on traditional markets.

At the national level, Algeria holds considerable potential for growth in the digital sector in the coming years. However, its current digital progress remains modest, largely due to insufficient support and financing mechanisms and limited innovation activities. We hope that Algeria will bridge much of its gap with emerging and developed countries in terms of the value added by ICT in the future.

Based on these findings, the following recommendations are proposed:

- Promote the establishment of institutions in the information and communication technology (ICT) sector.
- Enable ICT-sector institutions to expand into international markets.
- Generalize internet access and reassess pricing for ADSL, 4G, and 3G services.
- Expand the adoption of e-learning platforms and solutions.
- Strengthen and regulate legislation governing the ICT sector.
- Liberalize the telecommunications and internet markets.
- Raise public awareness of technological advancements.
- Develop a strategic plan to advance toward the Internet of Things (IoT).
- Expedite the implementation of comprehensive e-government projects beyond just public services.
- Encourage the adoption of e-commerce platforms.
- Support the banking sector in adopting electronic payments and transfers while ensuring robust electronic security systems.

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