

FinTech Adoption in the Algerian Banking Sector: Reality and Challenges**تبني التكنولوجيا المالية في القطاع المصرفي الجزائري: الواقع والتحديات****Samra AMRANE¹, Ouahiba DAMENE²**

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Received: 15/07/2023**Accepted:** 11/09/2023**Published:** 30/09/2023**Abstract:**

This research aims to evaluate the current state of FinTech adoption in the Algerian banking sector and the various electronic banking products and services offered by Algerian banks, and to identify the challenges that hinder its growth. The study was conducted using a descriptive analytical approach, based on data and statistics from the annual reports of the Central Bank of Algeria, the GIE, the official banks and Algeria post websites. Finding show that the digital transformation of the Algerian banking sector is still in its early stages, and faces many challenges, including the low penetration of digital technologies and the weakness of banking culture. Despite these challenges, Algerian banks are determined to continue the digital transformation to improve their operational efficiency and provide better services to their customers.

Keywords: FinTech; Banking sector; Electronic banking; Algerian banks; Digital transformation.

JEL Classification Codes: G10, G21, O31.

ملخص:

يهدف هذا البحث إلى تقييم واقع اعتماد التكنولوجيا المالية في القطاع المصرفي الجزائري، ومختلف المنتجات والخدمات المصرفية الإلكترونية التي تقدمها البنوك الجزائرية، وقد تم الاعتماد على المنهج الوصفي التحليلي، لتحليل البيانات والإحصاءات المستمدة من التقارير السنوية لمصرف الجزائر والتجمع النقد الآلي (GIE)، المواقع الرسمية للبنوك والبريد الجزائري. حيث أظهرت نتائج الدراسة أن التحول الرقمي للقطاع المصرفي الجزائري لا يزال في مراحله الأولى، ويواجه العديد من التحديات، بما في ذلك انخفاض اختراق التقنيات الرقمية وضعف الثقافة المصرفية، وعلى الرغم من هذه التحديات، إلا أن البنوك الجزائرية مصممة على مواصلة التحول الرقمي لتحسين كفاءتها التشغيلية وتقديم خدمات أفضل لعملائها.

كلمات مفتاحية: التكنولوجيا المالية، القطاع المصرفي، المصرف الإلكتروني، البنوك الجزائرية، التحول الرقمي.

تصنيفات JEL: G10، G21، O31.

INTRODUCTION:

The banking landscape has changed since the mid-1990s (Singh & Malhotra, 2004, p. 2) through the adoption of innovative information technologies. In this context, banks are reevaluating their business practices to enhance customer experience and maintain competitiveness (Jagtap, 2018, p. 122). Furthermore, the fast increase of the financial technology, commonly known as FinTech, has revolutionized the financial services because it has disrupted traditional financial systems and created new opportunities for financial inclusion, innovation, and efficiency.

Despite the global advancements in FinTech, the Algerian banking sector is still in its early stages and faces various challenges. In this regard, the Algerian government has recently taken steps to modernize the state's financial sector, including the introduction of electronic payment systems and the development of new financial technologies. These initiatives have created opportunities for banks to adopt FinTech solutions to improve their services and increase their efficiency.

The study problem:

The main question of this study is:

What is the current state of FinTech adoption in the Algerian banking sector?

In our endeavor to find an answer to this question, sub-questions arise as follows:

1. What is FinTech?
2. How is FinTech revolutionizing the banking industry?
3. Which products and services are offered electronically in Algeria?
4. What are the challenges that face the electronic banking in Algeria?

The study hypothesis:

To address the research problem of the study, we hypothesize that:

- The landscape of FinTech is still emerging in Algeria, and the adoption rate by banks is relatively low.

The study objectives:

The objectives of this study are as follows:

- Identifying the new technologies in the financial industry.
- Evaluating the current state of FinTech adoption in the Algerian banking sector.
- Assessing the challenges that hinder the growth of FinTech adoption in Algeria.
- Exploring the potential benefits of FinTech adoption for the Algerian banking sector.

The importance of the study:

The importance of this study lies within the importance of the modern technologies, represented by information and communication technology, electronic banking, and other technologies. Which has become necessary to have high levels of efficiency, particularly in the context of a new digital economy and rapid technological advancements. Therefore, the Algerian banks, like the other organizations, are required to use modern technological tools and methods to modernize their services and enhance their competitiveness.

Research Methodology:

In order to study the problematic of our research and answer its questions, we used the descriptive analytical approach. Thus, we relied on the annual reports of the Bank of Algeria,

the official banks' websites, GIE, and the website of the Algeria Post for data collection. Then, we analyzed and diagnosed the reality of the application of modern technologies in the Algerian banks. Moreover, we divided the research paper into two chapters as follows:

- 1- The theoretical background.
- 2- Financial technology adoption in the Algerian banking sector.

1- The theoretical background

1-1 Concept of FinTech :

"FinTech" as a term encompasses innovative financial solutions, and financial services providers such as banks and insurance companies. The usage of the term dates back to the early 1990's when Citibank group initiated a "Financial Services Technology Consortium" to facilitate technological cooperation efforts amongst banks (Divya & Murali , 2019, p. 23). In addition, the term refers to the start-up companies that emerged after the global financial crisis and established themselves as a new industry, offering insurance and financial instruments and providing advanced technology to financial service providers.

Financial Stability Board defined FinTech as a "technology-enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on the provision of financial services" (Financial Stability Board, 2017) .

According to (Leong & Sung, 2018, p. 75) "FinTech is a cross-disciplinary subject that combines Finance, Technology Management and Innovation Management".

Based on the previous definitions, it is clear that the FinTech refers to any innovative ideas that improve financial service processes by proposing technology solutions according to different business situations. These ideas could also lead to new business models or even new businesses.

1-2 The evolution of FinTech:

The adoption of technology in the financial sector is not new. It has gone through three main stages (Leong & Sung, 2018, p. 74) as follows:

- **FinTech 1.0:** This stage was from 1866 to 1967. The focus was on the development of the infrastructure of the economic globalization, which began with the introduction of the telegraph and the first successful transatlantic cable in 1869 by the Atlantic Telegraph Company.
- **FinTech 2.0:** It was from 1967 to the outbreak of the global financial crisis in 2008. This period is marked by significant developments, including the establishment of the Society of Worldwide Interbank Financial Telecommunications (SWIFT), which is a network of encrypted messages that transmit information and instructions, and the transition to the digital technology through the introduction of the first Automated Teller Machine (ATM) and credit cards.
- **FinTech 3.0:** It began around 2008 and continues to the present day. This period has been marked by the emergence of new technologies, such as the blockchain, digital currencies, artificial intelligence, and big data analytics.

Later, COVID-19 pandemic has accelerated the digital transformation and increased the need for digital connectivity to replace physical interactions between consumers and service providers (Erik & and others, 2021, p. 1).

1-3 Technologies used in the FinTech space:

- **Big data and Artificial intelligence:** Big data refers to "the massive volume of data generated by the increasing use of digital tools and information systems" (Financial Stability Board, 2017). On the other hand, the artificial intelligence (AI) involves the use of algorithms and advanced computational methods to analyze large volumes of data. These techniques enable the extraction of valuable insights, patterns, and trends from the data, contributing to improve decision-making in financial contexts.
- **Internet of things:** It refers to the network connectivity, software, and sensors that are integrated into physical devices and other items that enable those objects to collect and exchange data, send, receive, and carry out commands. The internet of things goes hand in hand with big data by making information readily available and consumable by other systems and networks (Bank for International Settlements, 2020, p. 22).
- **Cloud computing:** It has facilitated the analysis of extensive datasets, as well as the development of various FinTech applications (Financial Stability Board, 2017).
- **Digital currencies:** It is a peer-to-peer system that allows anyone to send and receive payments anywhere. Cryptocurrency transactions are recorded in a public ledger called blockchain, and the currency is stored in digital wallets. Bitcoin is the first and most well-known cryptocurrency, and it is created through a process called mining. Cryptocurrencies are often traded for profit, and more uses for blockchain technology are expected in the future, including trading financial assets such as bonds and stocks.
- **RegTech:** Regulatory technology or RegTech refers to the use of technology to facilitate regulatory and compliance requirements and reporting by regulated financial institutions.

1-4 Financial technology in the banking industry

Banks play an important role in the economic development of a country. The emergence of new generation banks has significantly transformed the entire banking operations through the use of sophisticated new technologies like internet banking, mobile banking, automated teller machine (ATMs), electronic fund transfer (EFT), debit cards, credit cards, etc. Technology has radically changed the delivery channels used to provide the elaborated services to customers (Pooja & Sudipta , 2022, p. 37).

1-4-1 Electronic banking:

Electronic banking also known as e-banking, refers to the use of electronic channels to carry out various banking transactions. Besides, it can be defined as "the deployment of banking services and products over electronic and communication networks to customers" (Singh & Malhotra, 2004). E-banking covers facilities such as checking account statements, fund transfer, bill payments, locating nearest ATM, opening a bank account, applying for loans, and obtaining information on financial products and services.

1-4-2 Benefits of E-banking:

E-banking offers several benefits for both banks and customers which are summarized as below (Salehi, 2010, p. 202):

From the banks' point of view, the first benefits for the banks offering e-banking services is better branding and being perceived as a technology leader, which can result in a better brand image. The second benefit is the ability to maximize profits through automated e-

banking services. Offering e-banking services can help banks achieve their main goal of maximizing profits for their owners. E-banking leads to lower operational costs potentially, lower margins, and expanded financing reach. E-banking also makes self-service and anytime access to accounts and loan information possible.

As for customers, the private ones take advantage of reduced costs, convenience, speed, and better funds management. They can conduct banking transactions from their homes or offices at any time of the day, and can access their accounts information and conduct transactions quickly and easily (Belbergui & others, 2020, p. 1062). This leads to better management of funds. For corporate customers, the benefits include timesaving and increased comfort, rapid and continuous access to information, better cash management, and more reliable services. E-banking facilities enable corporations to check on multiple accounts with ease and speed up the cash cycle, increasing the efficiency of business processes. Additionally, faster, easier, and more reliable services for customers were among the top drivers of e-banking development.

1-4-3 Electronic banking risks:

The digital transformation has brought about many benefits to both customers and banks, but it has also amplified traditional banking risks, including liquidity risk, credit risk, interest rate risk, and market risk. The use of electronic channels and cross-border transactions have intensified these risks. In addition, cyber security is another significant challenge that banks face, as the increasing use of technology has made them vulnerable to cyber-attacks that could lead to financial losses and data breaches (T.Al Ajlouni & Al-hakim, 2018, p. 8).

Furthermore, digital transformation requires skilled personnel who can manage and maintain the technology infrastructure. E-banking has also brought about a host of risks, including security risks, legal and ethical risks, reputational risks, money laundering risks, strategic risks, cross-border risks, and operational risks. These risks stem from issues such as the ambiguity of legal rights and obligations related to e-banking contracts, the risk of loss of reputation due to system failure or security breaches, and the complexity of detecting and preventing criminal activities in e-banking systems (Belbergui & others, 2020, p. 1065).

2- Financial technology adoption in the Algerian banking sector

In recent years, the Algerian banking sector has undergone a significant transformation through the adoption of digital technologies. This transformation has been driven by the changing needs and expectations of customers. In this section, we will present the current situation of e-banking in Algeria and the new electronic services offered by Algerian banks.

2-1 Overview of the Algerian banking system:

Algerian banking system consists of the Central Bank of Algeria, 27 banks and financial institutions. According to their activity types, banks and financial institutions are distributed as follows (Banque centrale d'algérie, 2022, p. 53) :

- Six (6) public banks ;
- Thirteen (13) foreign-owned private banks, including one mixed-capital bank;
- Eight (8) financial institutions, including five (5) leasing companies.

In addition to Algeria Post, which plays an important role in the Algerian financial system. Algeria Post has a specific status, is not officially a bank (Algeria Post has no banking license), and is regulated by the Ministry of Telecommunications.

At the end of 2021, the banking network had 1,603 branches, of which 1,202 are for public banks and 401 are for private banks. As for the financial institutions, the number of branches has reached 97, throughout the country, with a concentration in the north of the country and an estimated 75% dominance by public bank branches (Banque centrale d'algérie, 2022, p. 53) In total, banks and financial institutions have 1,700 branches, with a density one branch per 26,438 people in 2021. This rate is below the average that is estimated at one branch per 10,000 people (World Bank Group, 2020).

In addition, the network of Algeria Post has 4,055 branches, representing one postal establishment for every 3,057 active persons. In this context, post offices have a higher density than the banks. This is a positive indicator of financial inclusion, which allows individuals to receive their salaries and pensions, and transfer and save money. In total, the number of banks and post offices in Algeria amounts up to 5,658 institutions. In this regard, the financial services are limited to banks and post offices, with no influence from FinTech startups.

2-2 The Efforts of the Bank of Algeria in Promoting Electronic Banking Transactions:

Over the past decade, the Algerian state initiated many economic reforms in all sectors, including the banking sector, which has seen many innovations through the issuance of new laws and regulations to modernize banks and facilitate their adaptation of international standards.

In this line, the reforms include the project of generalizing electronic payment, under the supervision of the Interbank Automated Transaction and Monetics Company (SATIM). The latter was created in 1995 to develop, manage, and launch electronic payment products. Its main missions are (SATIM, n.d.):

- Processing of withdrawal transactions, proximity payments on POS terminals, and online payments.
- Personalization of payment and withdrawal CIB cards for the 18 Algerian banks.
- Interoperability of the CIB network with the electronic payment network of Algeria Post.

SATIM played a crucial role in the advancement of the Algerian banks through the establishment of an automated cash pool network known as “GIE Monétique” in June 2014. This strategic initiative aimed to regulate the e-payment system among banks, and define the roles and responsibilities of all involved parties. The grouping includes the Bank of Algeria, Algeria Post, and 18 other banking institutions.

2-3 Developments of the Mobile Market and the Internet Access in Algeria:

The quality of Internet access is one of the important factors contributing to access to the digital services. Its development helps to deploy more the technical financial services. The Algerian banking sector will have to take advantage of this new mindset of Algerians who are becoming more and more technophiles.

According to the Digital 2023 report of the GSMA Intelligence, which specializes in statistics on fixed Internet and mobile worldwide, the rate of Internet penetration in Algeria is estimated at 70.9% of the total population (32.09 million internet users) at the start of 2023. This shows a significant increase compared to the same period in 2022, which registered rate of 60.6% of the total population (27, 28 million internet users). In January 2022, the number

of smartphone connections in Algeria reached 46.57 million, which accounted for approximately 103.5 % of the total population (Datareportal, 2022).

2-4 Electronic banking in Algeria:

In recent years, the Algerian government has shown great interest in developing digitization in all fields, including the financial and banking sectors. Ultimately, the digitization of the Algerian banking sector will help to drive economic growth and improve financial inclusion in the country.

2-4-1 Cards (CIB / EDAHABIA):

The CIB card is an interbank card recognizable by the CIB logo. It is a domestic interbank payment and withdrawal instrument is accepted at merchants affiliated with the interbank payment network and by all ATMs installed on the national territory. It allows its holder, called the cardholder, to pay for purchases at various retail outlets such as hotels, restaurants, supermarkets, pharmacies, etc.

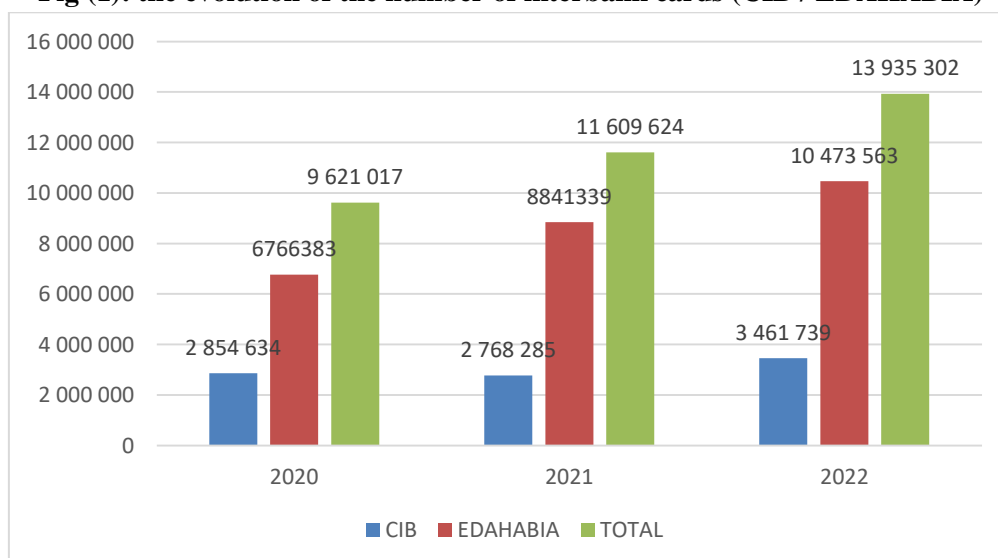
In this regard, Algeria Post launched in 2017 EDAHABIA card that is an electronic payment and withdrawal tool provided for its customers after they ask for it. Since January 5th, 2020, any Algerian citizen holding an EDAHABIA card from Algeria Post or a CIB card can make electronic payments on merchant websites, and especially the possibility for these merchants to receive their payments in their bank accounts regardless of the type of card used for payment (CIB or EDAHABIA). This is due to Algeria post's membership in the monetics economic interest group (GIE) and the achievement of interoperability between the two types of cards, which has entered into production (GIE Monétique, n.d.).

Therefore, the CIB/EDAHABIA card allows its holder to perform the following operations:

- Payment for purchases and services from merchants with an electronic payment terminal (TPE).
- Withdrawal of cash from ATMs.
- Online purchases.

Here is the evolution of the number of interbank cards (CIB / EDAHABIA):

Fig (1): the evolution of the number of interbank cards (CIB / EDAHABIA)



Source: Prepared by the authors based on the statistics of the GIE

At the end of 2022, the total number of interbank cards in circulation was 13,935,302; 3,461,739 CIB cards and 10,473,563 EDDAHABIA cards (GIE Monétique, n.d.). This marks an increase of 16.69% compared to 2021. Hence, we notice that Algeria Post holds the majority of bankcards in circulation (75%). The large number of postal current accounts (CCP) can explain this, Algeria Post is the main vector for the development of electronic money. Additionally, there are more than 22 million active accounts at Algeria Post, 11.6 million bank accounts in dinars, of which a little over 10.3 million are for individuals (as of 2021), and 4 million foreign currency accounts.

Furthermore, the rate of cardholders represents only 40% of the number of current accounts opened in banks and Algeria post, and constitutes a rather small percentage, reflecting the bank's reliance on traditional methods in their transactions (Boukrouh , 2022, p. 491).

2-4-2 Automated teller machines ATM/ Point of sale (POS):

Automated teller machines (ATMs) are one of the most popular services offered under e-banking. They allow users to check account balances, transfer funds, make deposits, and perform additional transactions.

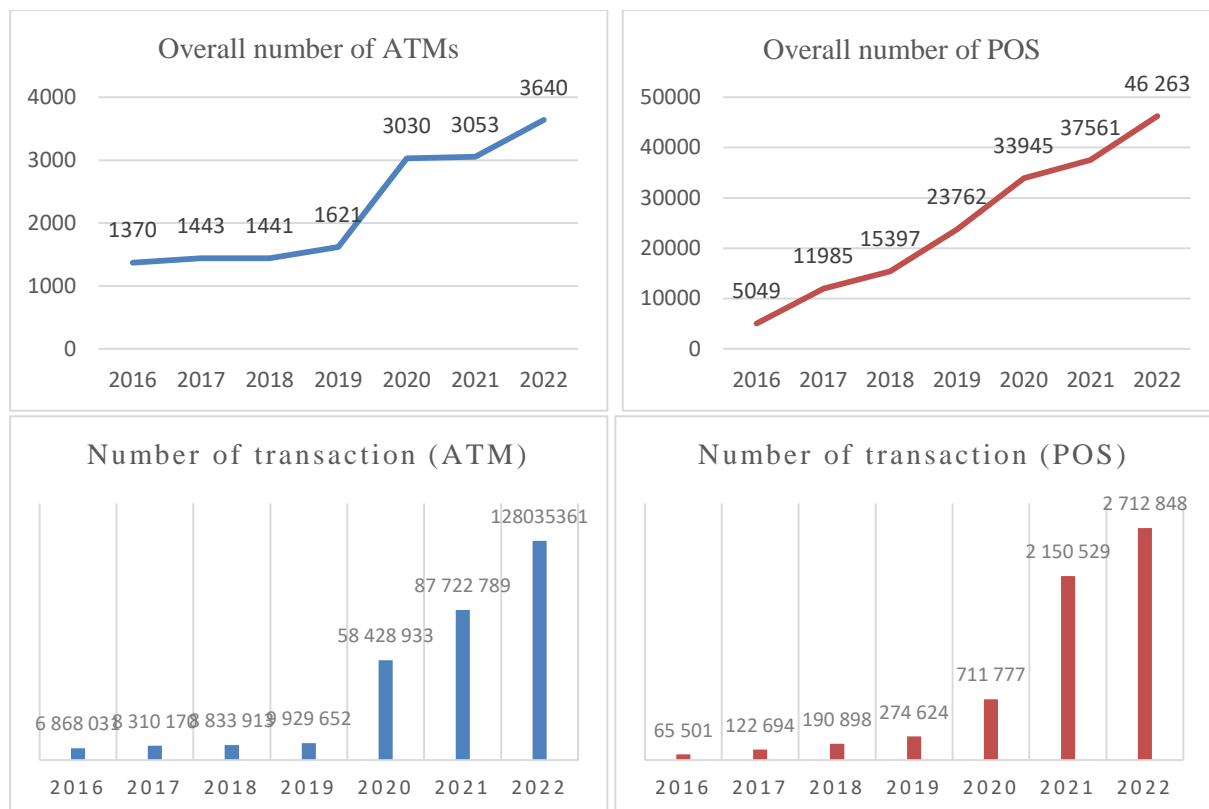
In addition, they offer 24/7 services, direct access to several services, availability of money at any time, and save time. Besides, Point of sale (POS) is a device that enables the holder of the CIB card to make purchases and quickly and securely pay bills. It offers several advantages such as:

- Accelerating the cash inflows.
- Making the payment process is simple, reducing the waiting time at the checkout, and increasing customer satisfaction.
- Using less cash that means less risk of loss, theft, and counterfeit cases.
- Giving a modern and innovative image.

The following charts gives information about the overall number of ATMs and POS (point of sale) terminals, as well as the number of transactions in Algeria per year from 2016 to 2022. These statistics include the activity carried out by CIB and EDAHABIA cards.

Fig (2): Evolution of the number of ATMs, POS and withdrawals in Algeria during (2016-2022)

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Source: Prepared by the authors based on the statistics of the GIE.

Through the data presented on the chart, we can deduce that the number of ATMs installed on the national territory has continued to increase over the years because it increased to 1370 in 2016, 1621 in 2019, 3030 in 2020, and 3640 by the end of 2022. As for the withdrawals from ATMs, they increased with 45.95% in 2022 and reached 128,035,361 transactions estimated at 2.387 billion dinars (+38.10%). This increase was thanks to the 19.22% growth in the number of ATMs; estimated at 3,640 devices at the end of the 2022.

As for the payments made through (POS), they increased to 40.57% in 2022, with more than 21.24 billion dinars. In this line, there had been a 26.14% increase in the last year, with 2,712,848 transactions. This increase was supported by a significant rise in the number of POSs in operation, from 37,561 in 2021 to 46,263 in December 2022. In 2020, the number of transactions at ATMs increased sharply to 58,428,933 and the number of transactions at POS terminals to 711,777. This could be attributed to various factors, such as changes in consumer behaviors due to the COVID-19 pandemic, increased adoption of digital payment methods, and changing preferences of consumers towards cashless transactions, who now prefer to withdrawing cash from ATMs rather than resorting to post offices or bank branches.

This progress shows that SATIM has made efforts to cover the entire Algerian territory with ATMs, in order to accelerate the development of the interbank electronic payment system. Expansion of the POS network as well as their acceptance will increase the use of CIB/EDAHABIA cards.

However, the use of electronic payment devices in Algeria remains "very limited" compared to the actual market needs, considering the number of licensed merchants and the number of cardholders.

2-4-3 Internet banking:

In Algeria, internet banking has become increasingly popular in recent years, with many banks offering online banking services to their customers. These services allow customers to conduct various financial and non-financial operations online, by visiting the bank's official website. In this vein, the Société Générale Algeria (SGA) was the first bank to launch an online banking platform in 2004 via its website. After their establishment, private banks rapidly adopted the same strategy. On the other hand, the public ones were notably slower to adopt e-banking, with Popular Credit of Algeria (CPA) becoming the first in June 2008, followed by other public banks like BNA in 2010 and BDL in 2011 (Charef, 2017, p. 179).

The Bank of Algeria has published the list of the authorized banking products and services, in Article 14 of Regulation No. 2020-01 of March 15, 2020, which sets out the general rules for the banking conditions applicable to banking operations (BANK OF ALGERIA). As for digital banking, authorized banking services via online banking include account inquiries (current, savings, and deposit), treasury bills, loans, checks, foreign exchange rates, consultation and printing of account history, downloading of account and transaction statements, transfers between accounts, interbank transfers, permanent and multiple transfers, bill payments, and ordering of bank cards and checkbooks (BANK OF ALGERIA).

2-4-4 Mobile banking:

With a large percentage of the population lacking access to traditional banking services, and a high mobile phone penetration, mobile banking has emerged as a convenient and affordable way for Algerians to manage their finances. Mobile banking applications have become increasingly popular in Algeria, with many banks offering their customers the ability to perform a variety of transactions from their mobile devices. This includes account balance inquiries, money transfers, bill payments, and more.

The Local Development Bank (BDL) was the first public bank that launched mobile banking at the beginning of 2016. On the other hand, the bank of BNP Paribas El-Djazair and the Algerian Gulf Bank (AGB) were the first two private institutions that have taken a step toward mobile technology (Graa & Benkorreche, 2020, p. 73).

Natixis launched BANXY, the first mobile bank in Algeria in 2018, which allows users to open a remote bank account, check their balance, download monthly statements, transfer money to other accounts, and open accounts in foreign currency (Groupe BPCE, 2018).

Besides, Algeria Post has also committed to a process of modernizing its activities by the launch of online services (BARIDINET and Services via Mobile). As part of the modernization of its postal and financial services and in order to improve quality for citizens. The launch of the Baridi Mob application which allows for all the functionalities that can be carried out with the "EDAHABIA" payment card, such as money transactions, credit consultation, telephone credit recharging, and payment of gas, electricity, internet, and phone bills without having to visit post offices (Algérie Poste, n.d.) .

2-4-5 Electronic Payment:

Another area where FinTech is gaining ground in Algeria is in online payments. According to Article 06 of Law No. 18-05 on electronic commerce, an electronic payment is defined as: "any payment instrument, authorized in accordance with the current legislation, allowing its holder to make proximity or remote payments through an electronic system"

(Official journal of the algerian republic No. 28, 2018, p. 5). In this line, the growth of e-commerce increased the demand for secure and efficient online payment solutions, mainly during COVID-19 pandemic when many customers were hesitant about using fearing the spread of the virus. In recent years, Algeria has launched of several online applications and services in the field of electronic payment.

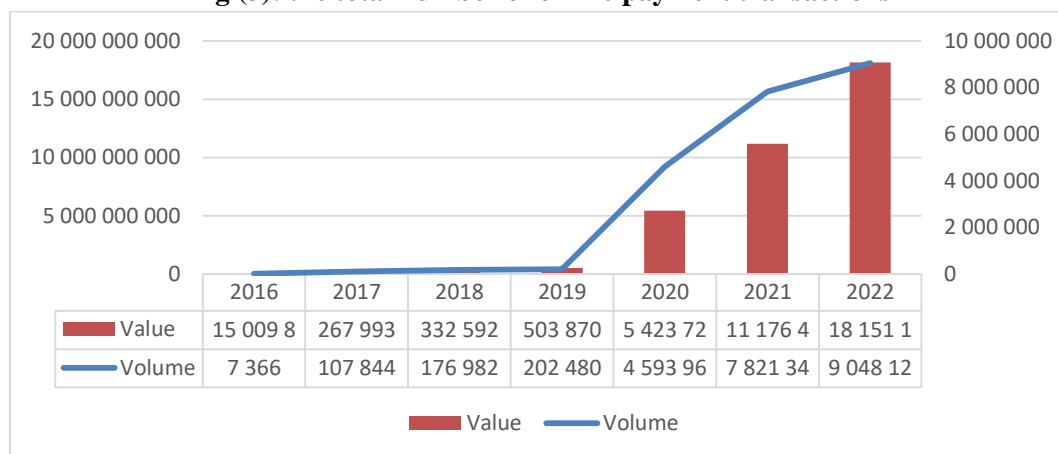
Algeria Post has launched the first contactless mobile payment application in Algeria (Barid Pay), which is a new mobile payment method with a simple use and highly secure, based on the technology of reading the bar code. This method allows the customer to make safe money transfers to the merchant without using EDDAHABIA card or cash.

The National Bank of Algeria (BNA) was the first banking institution in Algeria to implement and launch its own mobile payment application, (Wimpay-BNA), in March 2021, while The Al Baraka Bank of Algeria (M-Pay) followed suit in November 2021 (Le Groupe Al Baraka, 2021). Other banks in the country have also introduced mobile payment apps and other digital services that allow users to track expenses and receipts in real-time and access transaction histories at any time.

The adoption of mobile and electronic payments has numerous advantages, including tracking financial transactions and increasing tax revenues, reducing pressure on liquidity, promoting e-commerce, paying bills, tax stamps, online taxes, increasing the rate of banking, creating Algerian digital services and giving a modern image of the country.

In this context, as the other states, Algeria has made good progress in the modernization of payment methods. However, it is still late compared to developed countries. The following table shows the total number of online payment transactions:

Fig (3): the total number of online payment transactions



Source: Prepared by the authors based on the statistics of the GIE

Since October 2016, CIB Internet payment has been officially operational in Algeria. In a first phase, the service was opened for large invoicing companies: water, energy (gas and electricity), fixed and mobile telephony, insurance and air transport companies and some administrations. Overall, the chart indicates a strong growth in the use of electronic transactions, which is a positive trend for the digital economy.

From the data presented on the chart, we can deduce that both the volume and value of transactions have been steadily increasing over the years. The volume of transactions started at 7,366 in 2016 and increased to 9,048,125 in 2022. Similarly, the value of transactions

started at 15,009,842 DA in 2016 and increased to 18,151,104,424 DA in 2022, which is a very large increase.

One noticeable trend is the sudden increase in both volume and value of transactions from 2019 to 2020, which can be attributed to the COVID-19 pandemic that led to a surge in online transactions as people shifted to remote work and e-commerce. Today, 321 web merchants are members of the internet payment system by interbank card (GIE Monétique, n.d.).

Edahabia and CIB cardholders use them only for withdrawals and prefer to use cash for their payments. In fact, the use of cards for payments does not exceed 8%. According to the World Bank only 16% of Algerian adults and 11% of women use digital payments, compared to 23% of adults and 18% of women across the MENA region, and 36% of adults and 32% of women in Emerging Markets and Developing Economies (World Bank Group, 2021.)

2-5 Challenges and opportunities:

FinTech adoption has the potential to transform the Algerian banking sector, and provide new opportunities for innovation, efficiency, and financial inclusion. However, the adoption of FinTech and the development of the electronic banking in Algeria faces several challenges. The following lines show some obstacles facing the adoption of FinTech in Algeria (Cheikh, 2020).

- **Lack of infrastructure:** Algeria's banking and financial sector is characterized by outdated technological infrastructures, underdeveloped payment systems, and a lack of network in terms of ATM platforms, POS terminals, and merchant sites.
- **Regulatory barriers:** The finance sector is one of the most regulated sectors. Numerous laws and legislation affect how financial institutions operate. However, the lack of a comprehensive regulatory framework specifically designed for FinTech poses a significant challenge in Algeria. The absence of clear guidelines and regulations hinders the growth and innovation of FinTech companies and inhibits their ability to operate within a supportive legal environment.
- **The informal economy:** The informal sector dominates the Algerian economy as it gained a solid ground at the expense of the formal one. The informal economy in Algeria refers to the economic activities that are neither regulated nor recognized by the government, and that operate outside the formal sector.
- **The culture of cash:** Cash dominates the Algerian market and the majority of the population still use cash at the expense of electronic payment methods, which makes it difficult to trace and identify financial flows. Additionally, there is a lack of trust in online transactions and concerns around security and privacy. Many Algerians still prefer to conduct their financial transactions in person and with cash, and many traders are not willing to adopt e-payment methods due to the easy traceability of their commercial transactions.
- **The banking system:** The rate of banking remains quite low due to the low trust of Algerians in their banking system. Furthermore, the banks' coverage rate remains low because many Algerians do not have bank accounts, which makes it difficult for them to use digital payment methods and access digital services. This situation limits the potential of digital payments and hinders their adoption. Additionally, Algeria faces challenges in achieving financial inclusion for its population and in adopting FinTech

due to the low financial literacy levels and the unfamiliarity of many individuals with digital financial tools. Data from the World Bank show that financial inclusion is still a major challenge in Algeria, as only 44% of the adult population possess a bank account in 2021.

In general, the Algerian banking industry is in the initial phases of embracing FinTech. It has made some progress in the fields of information and communications technology and financial services. In this regard, there is considerable potential for expansion in the future, as more clients acclimate to advanced technologies and banks explore creative approaches to address their requirements. Algeria possesses numerous favorable conditions that make it a promising environment for the development of FinTech.

Algeria has high smartphone and Internet penetration rates, with 46.57 million smartphone connections and more than 37 million mobile Internet subscribers. With a large percentage of the population lacking access to traditional banking services, mobile banking has emerged as a convenient and affordable way for Algerians to manage their finances. Another area where FinTech is gaining ground in Algeria is online payments. With the growth of e-commerce, there is increasing demand for secure and efficient online payment solutions. Several Algerian banks have developed online payment systems, allowing customers to make purchases and pay bills online.

Conclusion:

The digital transformation of the Algerian banking sector has brought about many benefits to customers and banks. In this context, the Algerian banks have been slow to adopt digital technologies, including online and mobile banking, due to a variety of factors, such as the regulatory barriers, security concerns, and the lack of infrastructure. However, there have been recent efforts by the Algerian government and some banks to promote digitalization and improve the country's digital infrastructure. Nevertheless, there is still a long way to go for the Algerian banks to fully embrace digitalization and keep up with global trends in the banking industry.

Results :

- The FinTech industry in Algeria is relatively small compared to other countries in the region. However, there are some promising signs of growth in the FinTech industry in Algeria.
- The government has taken steps to promote FinTech innovation, including launching an incubator program for start-ups. However, several challenges still need to be addressed, including increasing bancarization, promoting e-commerce, and improving digital infrastructure and access to digital services.
- Traditional banking practices still dominate the Algerian banking sector. The country's banking system is still largely paper-based, and many Algerians are not yet comfortable with online and mobile banking.
- At the end of 2022, the monetics sector in Algeria had 3640 ATMs, 13 million cards, 46,263 POS terminals, and 321 web merchants.
- The health crisis has confirmed the importance of digitization in the banking sector, giving banks the opportunity to accelerate their digital transformation

Recommendations:

In order to advance the adoption of new technologies in the Algerian banking system and enhance the financial inclusion, efficiency, and innovation in the banking sector, the following recommendations should be considered:

- Investing in modern technology through improving the payment systems and expanding ATM network and POS terminals. This involves upgrading existing infrastructure and expanding coverage to ensure the accessibility to banks throughout the country.
- Changing customer attitudes towards digital banking and encouraging the formalization of the informal sector.
- Promoting the digital payment by building trust in online transactions and raising awareness of the population about the benefits and security of the digital payment methods.
- Strengthening the banking system by expanding the banks' coverage, increasing financial literacy levels, and promoting financial inclusion through accessible and tailored banking services to underserved populations.

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