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The Contribution Of Fintech Innovation To Expanding Financial Inclusion In Developing Countries– Algeria As A Case Study

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Abstract

This study aims to assess the impact of financial technology (FinTech) on enhancing financial inclusion in Algeria, an emerging economy facing structural challenges in integrating unbanked populations into the formal financial system. The research adopts a mixed descriptive–evaluative methodology that combines quantitative analysis of financial inclusion indicators (such as bank account ownership rates, digital wallet penetration, and the volume of electronic transactions). The findings reveal that the adoption of digital financial solutions in Algeria has contributed to increasing the proportion of individuals integrated into the formal financial system and to improving access to financial services, particularly in rural and low-income areas. The analysis highlights that mobile-based services, electronic wallets, and digital payment systems have been among the most influential drivers in integrating large segments of the population. However, the results also indicate the presence of regulatory and technological infrastructure constraints that limit the full potential of FinTech, including low levels of financial literacy, trust-related challenges in digital platforms, and regulatory compliance processes. The study concludes that effective collaboration among regulatory authorities, FinTech institutions, and the traditional banking sector is essential to maximize the impact of financial innovation on financial inclusion.

Keywords: *FinTech; financial inclusion; digital banking; financial innovation; Algeria.*

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Introduction

Banks rely on a variety of technologies and tools to execute operations within designated timeframes and at minimal costs. Technological advancements have accelerated these operations, particularly with the rise of e-commerce, which has increased the demand for more efficient, transparent, and faster technological systems. In this context, financial technology (FinTech) has emerged, offering innovative solutions that enhance banking operations. For instance, blockchain technology, initially developed as part of cryptocurrencies, has demonstrated the potential to deliver significant advantages extending beyond the financial sector into various other domains, despite widespread concerns, particularly among governments.

Banks heavily depend on documents and official records accompanying each banking transaction, which has imposed significant burdens on staff and heightened operational risks. This situation necessitated the adoption of modern technology to mitigate these risks, particularly regarding the secure storage of values and their rapid retrieval when needed—functions effectively provided by FinTech solutions. By offering an immutable digital ledger with enhanced transparency and recording each financial or commercial transaction in a chain of interconnected blocks, blockchain provides a reliable and efficient platform to reduce costs, strengthen trust among contracting parties, and accelerate payment and settlement procedures. Nonetheless, numerous concerns persist regarding this technology due to its decentralized nature and potential vulnerability to cyberattacks.

Research problem

Despite the significant global expansion of financial technology (FinTech), many emerging economies, including Algeria, still face substantial challenges in integrating unbanked populations into the formal financial system. The key question that arises is:

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To what extent can FinTech, through digital innovations such as electronic wallets and mobile payment platforms, enhance financial inclusion in Algeria, and what are the factors that hinder or facilitate this impact?

From this main problem, the following sub-questions arise:

- How do FinTech techniques contribute to the modernization of banking operations?
- How do FinTech techniques affect the enhancement of financial inclusion?
- What is the current state of financial inclusion in Algeria?

Significance of the Study

The significance of this research lies in elucidating both the theoretical and practical dimensions of implementing financial technology (FinTech) solutions and their impact on banking operations, with the overarching aim of promoting financial inclusion and fostering the modernization of the banking sector.

Research Objectives

This study seeks to achieve the following objectives:

- Conduct a comprehensive literature review of recent studies and scholarly work on innovative FinTech applications;
- Investigate the relationship between FinTech adoption and financial inclusion;
- Emphasize the critical role of FinTech solutions in enhancing transparency and efficiency in banking and financial transactions by providing accurate, reliable, and timely information.

Research Methodology

Aligned with the study's objectives, a descriptive research design was employed to examine the theoretical framework concerning the interplay between FinTech solutions and financial inclusion. Additionally, an analytical approach was adopted to illustrate the practical application of FinTech in modernizing banking operations and to assess its tangible benefits in the sector.

Theoretical Framework of Financial Technology (FinTech):

Many banks strive to improve their services and expand their reach to a larger customer base. As a result, numerous technologies have emerged that allow for money transfers or bill settlements without the need for physical movement. Over time, these technologies have evolved to cover various economic, financial, and even social and political domains. This development highlights the field of financial technology (FinTech), which will be explored in this section in terms of its concept and main characteristics.

Concept of Financial Technology:

The concept of financial technology is linked to two terms: "technology" and "finance," essentially referring to the use of technology in financial operations. This section provides a closer examination of these components.

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Definition of Technology:

Technology is defined as all techniques, skills, methods, and processes used in the production of goods or services, as well as in achieving specific goals such as scientific research (Mahmoud & khalef, 2021)

Definition of Financial Technology (FinTech):

Financial technology refers to modern technological innovations in the financial sector, commonly referred to as FinTech a combination of "Financial" and "Technology." These innovations include a range of digital programs used in banking operations, such as customer transactions, financial services, money transfers, currency exchange, interest and profit calculations, investment forecasting, and other banking operations (Zwawid & Hadjaj, 2018).

FinTech represents the intersection of technology and finance, focusing on financial transactions through the exploitation of modern technologies, including smartphones, communication networks, e-commerce, and digital currencies. According to the Digital Research Institute in Dublin, FinTech encompasses technological inventions and innovations in the financial sector, involving digital programs that facilitate banking operations, customer services, and financial activities such as transfers, currency exchange, and investment analysis. Additionally, the Financial Stability Board defines FinTech as technological financial innovations capable of creating new business models, applications, processes, or products with tangible impacts on financial markets, institutions, and service delivery.

Characteristics of Financial Technology:

From the above, the following characteristics of FinTech can be deduced:

- FinTech is closely linked to modern technologies; it cannot exist without advanced communication networks.
- It relies on innovations related to digital money transfers and therefore does not include traditional technologies.
- FinTech operates on stored digital units; it does not handle traditional cash.
- Implementation of FinTech requires intermediary companies providing technical services and can, in some cases, bypass central banks.
- Its adoption depends heavily on user acceptance rather than legal mandates, unlike traditional financial operations.

Importance of Financial Technology: The importance of FinTech includes:

- Diversifying economic activity by providing financial services to unbanked populations.
- Ensuring financial stability through technology-driven regulatory compliance and risk management.
- Facilitating cross-border trade and expatriate remittances with efficient and cost-effective payment mechanisms.
- Enabling alternative financing sources for small and medium-sized enterprises.
- Enhancing government efficiency through electronic payment systems, which also necessitates reforms in consumer protection and cybersecurity frameworks (Akila & Yousef, 2018).

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Objectives of Financial Technology:

FinTech aims to achieve several objectives, including:

- **Lower costs:** Reducing operational costs to allow wider access to financial services.
- **Greater privacy:** Customizing financial products and services to meet individual client needs across various channels.
- **Speed:** Leveraging technology to expedite procedures and operations, thereby increasing service delivery speed.
- **Accessibility:** Delivering cross-border financial services to clients beyond specific geographic areas.
- **Comparability:** Enabling clients to compare services and pricing across multiple institutions (Farah Hussein & Reda, 2022).

Financial Technology Applications:

The application of technology in financial and banking operations has led to the emergence of several solutions, including:

Electronic Banking Also known as internet banking, remote banking, or online banking, electronic banking allows customers to manage all financial operations using modern communication tools and software, at any time, without physically visiting a bank. These platforms enable fund transfers, bill settlements, and other financial services (Massoudi, 2015)

Electronic Wallets:

Electronic wallets are software programs designed to store digital financial values securely, protecting them from hacking or password loss. They also allow the retrieval of funds at any time using any electronic device. These wallets can take the form of compact discs, flash drives, or smartphone applications.

Crowdfunding:

This application emerged alongside the rise of social media platforms, enabling the collection of small digital financial contributions from a large number of individuals to fund the creation of startups or specific products. The World Bank defines crowdfunding as "an internet-enabled method for companies or other institutions to raise funds" (Hiba & Ramy, 209, p. 11).

Crowdfunding has gained significant popularity, particularly in the United States, where the global crowdfunding market reached over USD 117 billion in 2023, and is projected to grow to USD 2.3 trillion by 2032 (polarismarketresearch, 2024).

Blockchain:

Blockchain is a backend database maintaining a distributed ledger open to all participants. In business contexts, it functions as a network for exchanging transactions, values, and assets between peers without intermediaries, while legally it serves as a method for transaction verification. Blockchain innovation integrates multiple domains, including software engineering, distributed computing, cryptography, and economic game theory, providing a scalable, secure infrastructure and supporting digital asset protection and a global exchange network (Ayash , Fanawi, & Matlawi, 2020) .

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Digital Currencies:

Digital currencies are electronically stored monetary values managed via specific software. They are classified into two types: Cryptocurrencies: Virtual units primarily based on blockchain technology, issued by programmers without government oversight. While not equivalent to real-world currency, they are accepted for transactions by individuals and companies. Central Bank Digital Currencies (CBDCs): Issued and regulated by central banks, these digital currencies are equivalent in value to traditional money.

Trading:

With the advent of blockchain technology and cryptocurrencies, trading financial assets has become easier, allowing anyone, anywhere, to engage freely. The term "trading" emerged with cryptocurrencies as an extension of traditional stock market speculation. It refers to the exchange of stocks, bonds, foreign currencies, digital currencies, and indices, leveraging short-term price fluctuations to profit from price differentials.

Mechanisms for Implementing Financial Technology in Banks:

The adoption of financial technology by banks may encompass all their operational activities and may also extend to institutions associated with them. This can be clarified through the following dimensions:

Electronic Money:

The adoption of electronic money by banks can eliminate several challenges, including: (Berger & Gleisner, 2019)

- It is not subject to physical deterioration; thus banks do not need to protect it from fire or natural disasters;
- It does not require physical vaults to protect it from theft;
- It can be transferred, received, and stored easily without the need for armored vehicles or security escorts;
- It does not require ATMs or physical cash-handling machines, thereby significantly reducing operational costs, given that the cost of a single ATM can exceed 1,000 USD.

Smart Contracts:

Banks can rely on smart contracts to: (Chritidis & Devetsikiotis, 2016)

- Protect financial institutions against fraud and document forgery;
- Automatically adapt to legal and regulatory changes, thus reducing the costs of issuing new contracts;
- Provide transparency and easy accessibility, allowing contracts to be retrieved at any time with minimal effort.

Intelligent Verification Systems and Electronic Signatures:

These systems authenticate documents and contracts through advanced digital technologies, including Near Field Communication (NFC)-based identity verification and Know Your Customer (KYC) systems. KYC involves three main stages: Customer Identification Program (CIP), Customer Due Diligence (CDD), and

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continuous monitoring. These systems serve as a risk mitigation strategy, ensuring that financial institutions remain vigilant against illegal activities while maintaining accurate customer identity records.

Electronic Payment Systems:

Electronic payments rely on secure and user-friendly payment infrastructures. FinTech innovations in this area include electronic clearing systems, various types of bank cards, the SWIFT network for international transactions, and internal bank switching systems that facilitate inter-branch operations.

Financial Operations and Trading:

Trading markets have witnessed widespread adoption of FinTech applications, particularly blockchain technology, financial leverage tools, and technical analysis systems. These are increasingly supported by artificial intelligence to analyze market indicators and forecast financial trends over different time horizons.

Financial Technology and the Promotion of Financial Inclusion in Banks:

Enhancing financial inclusion in any country's economy cannot be achieved without the adoption of financial technology, especially in light of the rapid acceleration of global competition, which has made it imperative for banks today to adopt these technologies.

Concept of Financial Inclusion:

Definition of Financial Inclusion: The term financial inclusion first appeared in 1993 in a study by Leyshon and Thrift on financial services in Britain. The study examined the impact of closing a bank branch on the actual access of residents in a given area to banking services (Noufel, 2018). Following the global financial crisis of 2008, which severely affected most economies worldwide, international attention to financial inclusion increased. This was reflected in the commitment of governments to promote financial inclusion through policies aimed at facilitating and expanding access to financial services for all segments of society. It is worth noting that the United Kingdom and Malaysia were among the first countries to develop and implement national financial inclusion strategies in 2003 (El akidi & Ahmed, 2019).

The **International Monetary Fund (IMF)** defines financial inclusion as enabling all segments of society to use formal financial services, including bank accounts, savings, insurance services, and payment and transfer services (International Monetary Fund, Arab Fund, 2015).

Similarly, the **World Bank** defines financial inclusion as the ability of individuals and firms to access useful and affordable financial products and services such as transactions, payments, savings, credit, and insurance that meet their needs and are delivered in a responsible and sustainable manner (World Bank, 2015).

The **G20** and the **Alliance for Financial Inclusion (AFI)** define financial inclusion as the access and use of financial products and services by all segments of society, including marginalized and low-income groups, in a fair, transparent, and affordable manner (Atia & Ramy , 2019).

Financial inclusion requires the provision of a comprehensive range of financial services, including bank accounts, savings, short- and long-term loans, financial leasing, mortgages, insurance, salaries, payments, domestic and international remittances, pension schemes, and financial consumer protection (Union of Arab Banks, Union of Banks, 2017).

The **Bank of Algeria** defines financial inclusion as the availability and use of all financial services by different segments of society, including individuals and enterprises-especially marginalized groups-through formal channels such as current and savings accounts, payment and transfer services, insurance services, financing and credit services. It also emphasizes the need for innovation in financial services so that they are more suitable and offered at competitive and affordable prices (Bank of Algeria, bank, 2017).

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Objectives of Financial Inclusion:

Achieving financial inclusion contributes to several important objectives, including:

a. Enabling all segments of society to access formal financial services at affordable costs and through official channels (Bouafia & Ben Kida, 2018).

b. Facilitating access to financing sources in order to improve living conditions, particularly for the poor.

c. Promoting self-employment, economic growth, and empowering micro-enterprises to invest and expand.

d. Financial inclusion is a key driver of achieving the Sustainable Development Goals (SDGs), as expanding financial services helps improve living standards, empower women, finance micro-projects, reduce poverty and inequality, create employment opportunities, and integrate the informal economy into the formal economy by formalizing small and medium-sized enterprises, thereby increasing economic growth.

Dimensions of Financial Inclusion:

Financial inclusion consists of three main dimensions (El ouche, 2023, p. 657):

- **Usage:** This dimension refers to the extent to which individuals use financial services provided by financial institutions. It requires collecting data on users, frequency of use, and continuity of usage.

- **Access:** This refers to individuals' ability to reach financial services, taking into account barriers related to financial and banking channels, as well as banking and postal density.

- **Quality:** This dimension reflects the extent to which financial services meet customers' expectations, their continued use of these services, and the cost, speed, and efficiency of the services provided.

The evolution of the growth of financial technology (FinTech) companies:

Financial technology (FinTech) companies are experiencing rapid global growth, with their geographical distribution and patterns of investment attraction varying across regions and continents (Albarrak, M. S. & Alokley, S. A, 2021). Total global investment in FinTech has increased markedly, rising from USD 19 billion in 2013 to approximately USD 130 billion in the first half of 2019. (Alkadi & Abed, 2023) Recent data further indicate that FinTech investments reached nearly USD 250 billion in 2021, followed by a slight decline in 2022.

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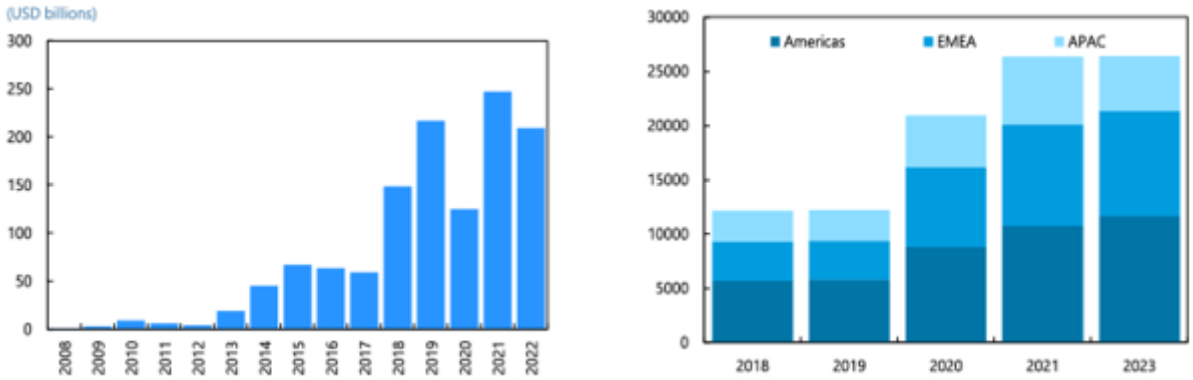
Figure 1: Fintech investments (USD billions) and Number of fintech start-ups



Source: Fintech across the world; KPMG; BCG; CrunchBase; Statista; author's calculation.

The data on the number of FinTech startups indicate sustained growth across different regions. Between 2018 and 2023, the total number of startups increased in the Americas, Europe, the Middle East and Africa (EMEA), and the Asia Pacific (APAC) region. The Americas held the largest share of startups in 2018; however, the Asia–Pacific region experienced substantial growth, approaching the level of the Americas by 2023. The EMEA region also recorded a steady increase over the same period (Serhan, 2024).

Importance of Achieving Financial Inclusion:

Impact of Financial Technology on Financial Inclusion:

Financial technology contributes to financial inclusion through several mechanisms (committee, Basel on banking control, 2018):

a. FinTech has helped overcome the geographical distance between bank branches and individuals by relying on digital financial technologies, particularly mobile services. This has reduced costs and expanded the provision of financial and banking services in a faster, more transparent, and more efficient manner. It has also contributed to narrowing the financing gap for small and medium-sized enterprises through lending platforms that facilitate the implementation of such projects.

b. The expansion of electronic payments through digital payment technologies has enabled banks to reduce dependence on cash, facilitate the settlement of commercial financial transactions, and lower their costs.

c. FinTech and innovative financial solutions have helped mitigate the disruption of correspondent banking relationships by providing more efficient, transparent, and cost-effective cross-border payment mechanisms.

d. Financial technology has improved and enhanced the customization of financial services, enabling banks to refine their traditional offerings and deliver them to the regulated market in more effective and innovative ways.

FinTech branches / FinTech sub-sectors

The FinTech industry faces several challenges, including data gaps that hinder effective monitoring of its development and its impact on central banks.[21] Nevertheless, FinTech offers significant opportunities for innovation and for enhancing banks' financial performance, particularly through the adoption of advanced technologies. (Alkadi & Abed, 2023) The efficiency of modern markets relies on sophisticated data

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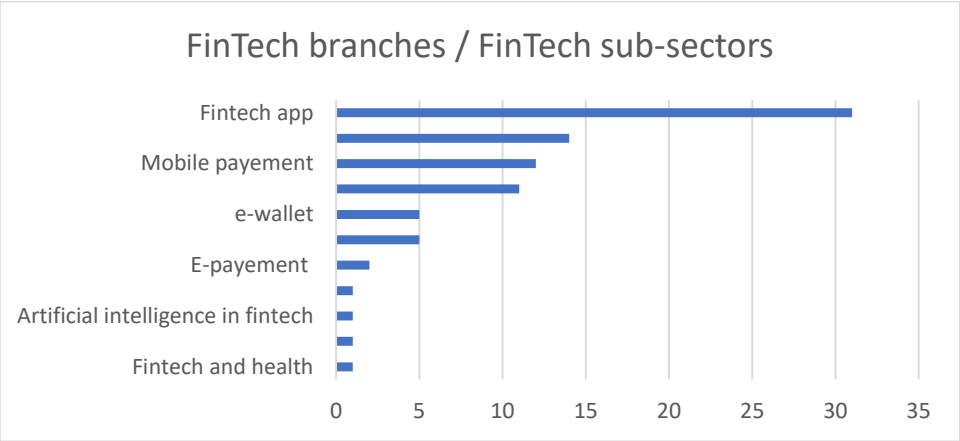
structures, such as the Limit Order Book, to manage high-speed order matching processes. These dynamic structures may lead to stable equilibria or, alternatively, to fragile states that are prone to collapse.

In the context of small businesses, FinTech contributes to addressing many of the challenges they face through innovative business models, such as crowdfunding and peer-to-peer lending (Bu, Y. & Wu, 2021).

Figure 2: FinTech branches / FinTech sub-sectors



Source: Baker, H., Kaddumi, T. A., Nassar, M. D., & Muqattash, R. S. (2023). Impact of Financial Technology on Improvement of Banks' Financial Performance 3. Journal of Risk and Financial Management, 16(4), 230.

Assessment of the State of Financial Inclusion Globally and in Arab Countries:

Financial inclusion levels vary across Arab countries, influenced by several factors, including economic and political stability, as well as the prevalence of financial literacy among individuals. Based on these variations, Arab countries can be categorized into three groups: nations with high financial inclusion, nations with medium financial inclusion, and nations with low financial inclusion. The following table provides an overview of this classification.

Table 1: Percentage of adults aged 15 and above holding accounts at formal financial institutions in Arab countries during the period 2011–2021 (%).

Arab countries	**2021**	**2017**	**2014**	**2011**
Countries with high levels of financial inclusion				
UAE	86	87.4	83.2	59.7
Kuwait	86.8	72.9	79.8	-
Kingdoom of Bahrain	64.5	81.9	82.6	-
Saoudi Arabia	46.4	69.4	71.7	74
Countries with medium levels of financial inclusion				
Algeria	**33.3**	**50.5**	**42.8**	**44**
Lebanon	37.0	46.9	44.8	21
Tunisia	32.2	27.3	36.8	37
Jordan	25.5	24.6	42.1	47
Morocco	39.1	-	28.4	44
Libya	-	-	65.7	-
Countries with low levels of financial inclusion				
Mauritania	17.5	20.4	19.0	-

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Egypt	9.7	13.7	32.1	27
Iraq	10.6	11.0	20.3	19

Source: Prepared by the researcher based on: **https://www.worldbank.org/en/publication/globalfindex/Data**

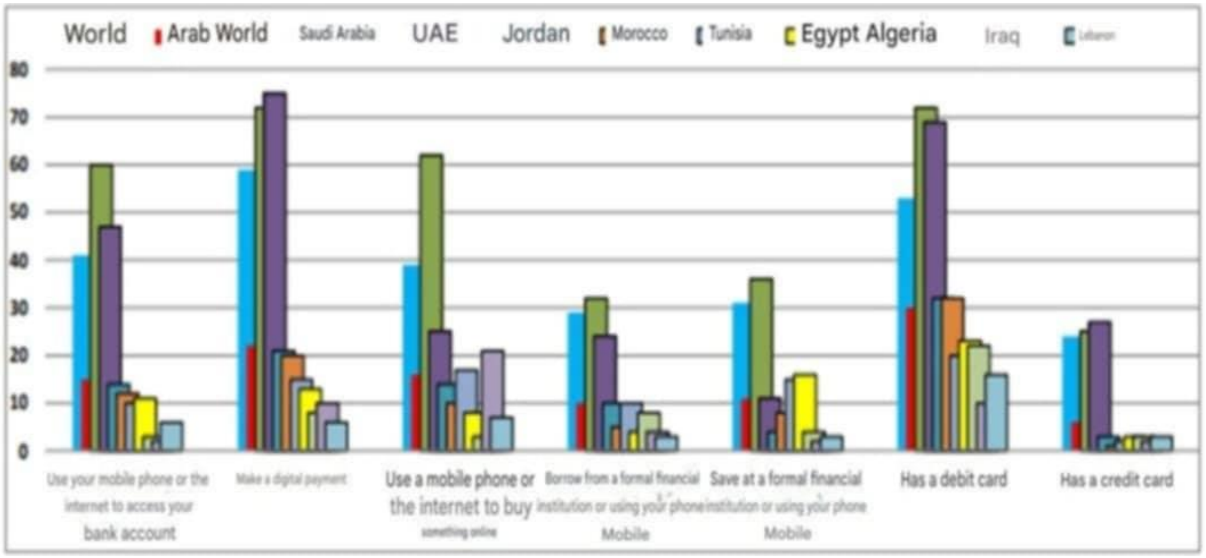
The Gulf Cooperation Council (GCC) countries are considered pioneers both regionally and globally in implementing the concept of financial inclusion. Financial and banking services in the Gulf countries are characterized by their widespread availability, advanced development, and the use of cutting-edge technologies to deliver services via mobile phones and the Internet. For example, the United Arab Emirates (UAE) was among the first countries to pursue financial inclusion through the implementation of a wage protection system established by the Central Bank, as well as by allowing exchange companies to provide services to segments of the population unable to access traditional banking.

Furthermore, the adoption of digital payment systems and electronic wallets has expanded financial inclusion by facilitating access and reducing costs for previously excluded groups. Both Saudi Arabia and the UAE have also issued prepaid cards for financially underserved populations under the wage protection framework (Union of Arab Banks, 2019).

Comparison of Digital Financial Inclusion Indicators between Arab Countries and the World:

Although the adoption of financial technology in Arab countries is relatively recent, its use has been growing rapidly. Some countries, such as Saudi Arabia and the UAE, have experienced significant growth in financial inclusion, surpassing the global average. The following figure illustrates these trends:

Figure 3: Digital financial inclusion indicators in Arab countries compared to the world in 2021.



Source: (Kardousi, 2024, p. 271) & World Bank, Global Findex Database Based on the figure above, digital financial inclusion indicators in the Arab world during 2021 showed relatively low levels compared to the global average. Both Saudi Arabia and the UAE achieved high levels across all digital financial inclusion indicators, reflecting the development of infrastructure and the advancement of financial technology in these countries, which positively influenced the adoption of modern technologies for conducting financial transactions. Other countries, such as Algeria, Tunisia, Morocco, Jordan, and Egypt, recorded moderate levels, while Lebanon and Iraq ranked lowest due to political instability and weak digital economies.

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Table 2: Financial Inclusion Index in Selected Arab Countries, 2021

Country	Global Rank	Arab Rank	Financial Inclusion Index
UAE	49	1	85,74
Saudi Arabia	60	2	74,32
Jordan	102	3	47,2
Morocco	108	4	44,37
Algeria	111	5	44
Tunisia	118	6	36,85
Palestine	122	7	33,64
Egypt	127	8	27,44
Mauritania	132	9	23,46
Lebanon	134	10	20,7
Iraq	135	11	18,57
Yamen	136	12	11,9

Source: Prepared by the researcher based on: https://www.worldbank.org/en/publication/globalfindex/Data#sec3

Global Findex Database The table highlights the significant disparity in financial inclusion across Arab countries in 2021. The UAE and Saudi Arabia occupied the top positions, while Yemen was at the bottom. According to the same database, financial inclusion decreased in some countries, such as Kuwait, where the index fell from 86.77% in 2011 to 72.9% in 2014, highlighting the need to investigate factors contributing to banking reluctance.

Assessment of Financial Inclusion in Algeria:

Algeria has undertaken multiple reforms to achieve financial inclusion through the adoption of financial technology. Although somewhat delayed, these measures have shown acceptable results, especially during the COVID-19 pandemic, which compelled the government to adopt strict measures, including electronic payments and the activation of remote financial services.

Online Payments:

The implementation of e-banking and digital payment solutions has significantly contributed to spreading banking awareness among individuals. Since the launch of online payments in 2016, a total of **457 million transactions** have been completed up to 2023 (Automated Cash Network, 2024). The data indicate clear growth in online payments, particularly since 2020, as shown in the following table:

Table 3: Evolution of Online Payments in Algeria (2016–2023)

Year	2016	2017	2018	2019	2020	2021	2022	2023
Number of transactions	7.366	107.844	176.982	202.480	4.593.960	7.821.346	9.048.125	15.351.354
Amount(Million DZD)	15	268	332	504	5.424	11.178	18.152	32.196

Source: Automated Cash Network, on:

https://giemonetique.dz/qui-sommes-nous/activite-paiement-sur-internet

Online payment services officially launched in Algeria in 2016, initially recording **7,366 transactions** worth over 15 million DZD. Early services focused on bill payments for telecommunications and transportation, gradually expanding to e-commerce and event ticketing. Following Algeria Post's integration into the

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Automated Cash Network in January 2020, interbank transaction exchanges became possible, with online payments exceeding **15 million** transactions in 2023, amounting to over **32 billion DZD**.

By 2023, **3,847 ATMs** were operational, processing transactions worth 3,220 billion DZD, reflecting a clear trend toward digital financial adoption. Electronic payments have helped eliminate economic and social issues, such as queues at post offices and service centers, while promoting banking literacy and the use of bank cards.

Postal Service Density:

The spread of post offices across regions contributes to broader access to financial services, known as postal density. Algeria has implemented measures to bring post offices closer to individuals, particularly in rural areas. The following table illustrates the evolution of postal service infrastructure from 2014 to 2022:

Table 4: Postal Service Infrastructure Supporting Financial Inclusion in Algeria (2014–2022)

indicators	2014	2015	2016	2017	2018	2019	2020	2021	2022
Number of post of offices	3633	3678	3755	3824	3907	4000	1057	4106	4189
Number of post in service	3533	3585	3654	3743	3811	3862	3984	1055	4143
Number of post offices out of service	167	168	152	314	545	279	143	149	234

Source: https://giemonetique.dz/qui-sommes-nous/activite-paiement-sur-internet

The table shows continuous improvements in postal infrastructure, including service digitization, deployment of over **1,900 ATMs**, and integration of Algeria Post into the Automated Cash Network, all contributing to improved financial services. Future expansion is expected through agreements between the Ministry of Postal Services, Communications, and Housing to establish post offices in new urban areas.

According to 2023 statistics from the Ministry of Postal Services and Communications, Algeria had **4,289 post offices**, including **86 mobile offices**, and **13,011 service counters**, corresponding to a postal density of **1 office per 10,500 individuals** (0.97 according to Cameron's model).

Banking Density

The Algerian banking system comprises **20 licensed banks**, distributed as follows:

- 6 public banks.
- 13 private banks with foreign capital, except for one mixed-capital bank (Al Baraka Bank).
- 8 financial institutions (2 public, 6 private)

Table 5: Banking Density in Algeria (2014–2021)

Years	Population(millions)	Total number of bank branches	Banking penetration(2/1)	Banking density (1/2) per 10,000 inhabitants
2014	38760168	1531	25316	0,395
2015	39543154	1556	25413	0,394
2016	40339329	1577	25579	0,391

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2017	41136546	1595	25790	0,388
2018	41927007	1617	25928	0,386
2019	42705368	1642	26008	0,384
2020	43451666	1671	26003	0,385
2021	44177969	1700	25987	0,358

Banking penetration = population (number of branches)/ (one branch per 10,000 inhabitants)

Source: Kardousi, M. (2024). "The Role of Financial Technology in Enhancing Financial Inclusion: A Case Study of Selected Algerian Banks." PhD Thesis, University of Guelma, Algeria, p. 239.

Banking density in Algeria remains below global standards (0.385), indicating inadequate branch coverage and limited access to banking services, particularly in rural and remote areas. Postal density exceeds banking density, with **4,106 electronically connected post offices** compared to **1,700 bank branches** in 2021.

Bank Cards:

By the end of 2023, over **16 million electronic payment cards** (postal and bank cards) were in circulation in Algeria. The following table details their distribution:

Table 6: Distribution of Payment Cards in Algeria, 2023

Number of Cards	Postal (gold) Cards	Bank Cards	Total
2023	12.487.304	4.022.203	16.509.507

Source: Prepared by the researcher based on:

https://giemonetique.dz/cartes/

The data show that over 12 million individuals (76%) hold postal cards, whereas bank cards represent only 24%, with 95% owned by individuals and only 5% issued for business purposes (187,984 cards), reflecting limited banking coverage and infrastructure.

Conclusion:

Financial technology relies on the utilization of the latest technological advancements to enable individuals and institutions to conduct financial and banking operations in the most time- and cost-efficient manner. It also contributes to the development of innovative solutions aimed at achieving financial freedom and promoting financial inclusion a goal pursued by countries worldwide due to its significant economic and financial impacts.

Achieving financial inclusion can accelerate economic growth, improve individuals' living standards, and help combat financial crimes through the use of FinTech solutions. These technologies have significantly enhanced banking performance despite associated risks such as cybercrime and digital fraud, while also mitigating traditional risks that previously imposed high costs on governments and financial institutions. While opinions differ between supporters and skeptics regarding potential risks, the adoption of financial technology remains an inevitable necessity driven by rapid technological developments.

Research Findings:

The study yielded the following key findings:

- Financial technology serves as an effective tool for enhancing financial inclusion, particularly in the aftermath of the COVID-19 pandemic.

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- FinTech accelerates and facilitates transactions, increasing timely and affordable access to financial services.

- Establishing the foundations of financial inclusion in the Arab world requires the enhancement of financial literacy, awareness, and knowledge, alongside the development of the FinTech industry to support digital financial services.

- Similar to other Arab countries, Algeria has achieved low levels of financial inclusion, which do not match its international standing, primarily due to limited banking openness and an underdeveloped banking network.

- Lack of trust and concerns regarding the use of electronic payment cards have negatively affected adoption rates.

- Insufficient awareness campaigns and marketing efforts by financial institutions contribute to low usage of digital financial services.

- A clear gap exists in societal awareness and understanding of FinTech and its significance, particularly in relation to e-commerce and its impact on daily life, such as ease of access to commercial services and online shopping.

Recommendations:

Based on the study, the following recommendations are proposed:

- Enact laws and regulations to govern electronic transactions, aiming to enhance security and build trust among users.

- Encourage startups in the FinTech sector through financial and material support.

- Promote the adoption of electronic payment methods by strengthening merchants' ability to collect payments, enhancing the use of prepaid cards and digital wallets, and evaluating opportunities to facilitate the integration of payment institutions and digital entities.

- Strengthen banking density and raise awareness among banks to protect their market share.

- Allocate budgets for advertising campaigns across various media to educate citizens about the benefits of using digital channels.

- Continuously upgrade financial services in line with evolving FinTech requirements.

- Ensure adequate human resource development by employing skilled personnel capable of managing and guiding FinTech implementation in banks.

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