Financial Technology as a Mechanism to Enhance Financial Inclusion in Algeria: *An Analytical Study of Digital Financial Inclusion Indicators in Algeria from 2011 to 2021*

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Abstract:

This research paper aims to shed light on the role of financial technology in promoting financial inclusion in Algeria by analyzing a set of indicators related to digital financial inclusion in Algeria during the period from 2011 to 2021. In order to understand and comprehend the various aspects and to reach an accurate and correct answer to the research problem, we adopted the descriptive-analytical approach suitable for this study. The descriptive approach aligns with the theoretical aspect of the study, while the analytical approach suits the practical aspect of our research paper. This study concluded with several findings, the most prominent of which is that financial technology plays a major role in enhancing financial inclusion. However, Algeria still records low and modest rates in the levels of digital financial inclusion. Therefore, Algerian governmental authorities must intensify their efforts to enhance these levels.

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Introduction

Financial technology is one of the modern concepts that has emerged in the financial sector due to the innovative, advanced, and modern characteristics of the technologies and services it offers. It enables financial institutions and fintech startups to expand the reach of their financial products and services to financially excluded segments, especially low-income individuals, the poor, and small enterprises that the banking sector has refrained from financing. This has contributed to reducing the cost of providing financial services and improving their efficiency. Financial technology is considered one of the fundamental pillars in promoting financial inclusion, as it provides a diverse range of financial and banking products and services and facilitates access to and use of them with high quality. These products and services are made available to various segments of society in a way that ensures ease of access and usage. The continuous advancement of financial products and services has allowed countries, central banks, and fintech companies to produce digital financial services and products that meet the needs and desires of financially excluded groups to achieve digital financial inclusion.

Research Problem:

Based on the above, the following research problem can be formulated: Does financial technology play a role in enhancing financial inclusion?

Research Objectives:

- To define the theoretical framework of financial inclusion;
- To define the theoretical framework of financial technology;
- To analyze digital financial inclusion indicators in Algeria for the period from 2011 to 2021;
- To identify the various challenges facing the process of enhancing digital financial inclusion in Algeria;
- To identify the various efforts adopted by the Algerian government to enhance the levels of digital financial inclusion in Algeria.

Significance of the Study:

The study derives its significance from addressing the topic of financial technology and its use as a mechanism for promoting financial inclusion through our analysis of a set of digital financial inclusion indicators in Algeria.

Methodology:

In order to accurately answer the research problem and understand various aspects of the topic, we relied on the descriptive-analytical approach, as well as the case study method. The descriptive method appears through our coverage of the theoretical aspect of the study, i.e., through our description of the study variables (financial inclusion and financial technology). The analytical method appears through our analysis of digital financial inclusion indicators in Algeria. As for the case study method, it appears through our focus on Algeria as a country undergoing a digital financial inclusion experience.

Chapter One: Theoretical Framework of Financial Inclusion

Financial inclusion is considered one of the most important modern terms that emerged after the global crisis that affected the entire world in 2008.

First: The Concept of Financial Inclusion

1. The Emergence of Financial Inclusion

The term "financial inclusion" first appeared in 1993 in a study by Leyshon and Thrift on financial services in southeast England, which addressed the impact of closing a bank branch on the actual access of residents to banking services. In 1999, the term was used more widely to describe the determinants of individuals' access to available financial services. In 2008, following the global financial crisis, interest in financial inclusion increased internationally through the implementation of policies aimed at enhancing and facilitating access to financial services for all societal groups and enabling them to use such services correctly, while encouraging financial service providers to offer innovative, diverse, and low-cost services (Salhiha, Nadia, & Moamer, 2021, p. 280). The G20 made financial inclusion a main pillar in the economic and financial development agenda, and the World Bank considered the universal access to financial services a fundamental pillar in combating poverty. In 2013, the World Bank launched a global program aimed at benefiting from innovations, exemplified by the promotion of financial services and focusing on payment systems and innovative retail payments. New programs were also launched by global institutions such as the Consultative Group to Assist the Poor (CGAP) and the International Finance Corporation (IFC) (Zoubir & Hassan, May 8, 2022, p. 4).

2. Definition of Financial Inclusion

Financial inclusion has attracted great interest from financial experts and institutions alike. The International Monetary Fund defines it as:

"A state that reflects the ability of individuals and companies, including low-income and young people, to access and benefit from a comprehensive range of high-quality financial services (payments, transfers, savings, credit, insurance) provided by a variety of providers in an easy and sustainable manner under an appropriate legal and regulatory environment."

The World Bank defines it as:

"Means that individuals and companies can obtain useful and affordable financial products and services that meet their needs—transactions, payments, savings, credit, and insurance—delivered in a responsible and sustainable manner" (Ayman & Wafaa, 2021, p. 74).

The Bank of Algeria and the Council of Governors of Arab Central Banks and Monetary Authorities define financial inclusion as:

"The availability and use of all financial services by all segments of society, including individuals and institutions, through formal channels, including savings accounts, payment and transfer services, insurance, financing, and credit, in addition to innovating more suitable financial services at competitive prices,

protecting financial service consumers' rights, and encouraging them to manage their money and savings properly to avoid resorting to informal, unregulated channels." (Rachid & Abdelhafid, 2021, p. 373)

Monetary policy defines financial inclusion as a genuine strategy to improve the effectiveness of monetary policy, based on the inverse relationship between inflation rates and the volume of loans and commercial bank advances as a percentage of GDP. This indicates that the availability of credit when interest rates are reduced leads to increased investment and reduced inflation. In other words, the more individuals have access to formal financial services, the greater the financial and monetary stability—precisely what financial inclusion strategies aim to achieve (Ne'ma Nagham & Ahmed Nouri, 2020, p. 19).

Based on the previous definitions, we can observe that financial inclusion focuses on the following key pillars:

- Ease of access to financial products and services for all segments of society;
- Services and products characterized by quality and development;
- Regulation and oversight to ensure financial stability;
- Planning for the future, managing money effectively, and dealing with crises.

Thus, financial inclusion can be defined as:

"Making all financial products and services available and usable by all segments of society according to their needs, offered with quality and at affordable prices."

Second: Objectives and Importance of Financial Inclusion

1. Objectives of Financial Inclusion

There are approximately 2.5 billion people who do not have access to formal financial services, and 75% of the poor do not deal with banks. This is due to high costs, long distances, and the burdensome requirements to open a financial account, according to reports issued by the World Bank in 2016. Therefore, in 2003, the United Nations required world countries to address the constraints that exclude customers—especially the poor and low-income groups—from fully participating in the financial sector and to contribute to building inclusive and integrated financial sectors that help people improve their living conditions. The objectives of financial inclusion are as follows (Nabil, 2019, p. 163):

- Raising the standard of living, reducing poverty rates, and achieving economic growth;
- Ensuring that all segments of society obtain financial products that are appropriate to their needs and conditions;
- Paying attention to many segments, especially marginalized ones such as the poor, low-income earners, and micro, small, and medium enterprises that do not receive formal financial products suitable for their needs;
- Ensuring continuity in service delivery and improving the investment climate and financial sustainability of institutions to ensure choice and clients' ability to bear the costs of financial services;
- Making all financial services accessible to all segments of society at reasonable costs, including savings, deposits, payments, transfers, insurance, and credit services;

• Organizing institutions securely and soundly;

• Establishing clear performance standards that govern the provision of financial services through safe and sound regulation.

2. Importance of Financial Inclusion

The importance of financial inclusion lies in the following (Aya, 2021, pp. 376–377):

• Diversifying financial products and services and focusing on their quality attracts more customers and transactions and enhances competition among financial institutions;

• Paying attention to low-income individuals and to specific social groups such as women and youth affects the social aspect;

• Focusing on enabling micro, small, and medium enterprises to access financial services and integrating them into the formal financial sector by providing suitable products and services;

• Creating new job opportunities, which leads to economic and social growth, thus reducing unemployment and poverty rates, improving income distribution, and raising living standards;

• Integrating the informal sector projects into the formal sector, which increases government tax revenues.

Third: Dimensions and Indicators of Financial Inclusion

1. Dimensions of Financial Inclusion

The concept of financial inclusion has evolved in recent years to include four main dimensions, which are (Souria & Saeed, 2018, pp. 109–110):

• Access to financial services:

Refers to the ability to use financial services from formal institutions. Determining access levels requires identifying and analyzing potential barriers to opening and using a bank account, such as cost and proximity to banking service points.

• Use of financial services:

Refers to the extent to which clients use financial services provided by the banking sector. This requires collecting data on the regularity and frequency of use over a specific period.

• Quality of financial services:

Measuring quality is a challenge in itself. Over the past 15 years, the concept of financial inclusion has moved to the agenda of developing countries, where it became necessary to improve access to financial services. This dimension is unclear, as many factors affect the quality of financial services (cost, consumer awareness, efficiency of compensation mechanisms, consumer protection services, financial guarantees, and market competition transparency).

2. Indicators for Measuring Financial Inclusion

• Global Findex (Global Financial Inclusion Database):

This is the most comprehensive global dataset on how adults save, borrow, make payments, and manage risks. The database was launched with funding from the Bill & Melinda Gates Foundation and has been published every three years since 2011. Data is collected in partnership with Gallup Inc. through nationally representative surveys of more than 150,000 adults in over 140 economies. The 2017 edition included updated indicators on access to and usage of formal and informal financial services, and added new data on the use of financial technology, including mobile phones and the internet for financial transactions (Sabira, 2022/2023, p. 54).

• Global Knowledge Index (GKI):

This index was developed through a joint program between the Mohammed bin Rashid Al Maktoum Foundation for Knowledge (MBR.F) and the United Nations Development Programme (UNDP). It serves as a tool to monitor the state of knowledge in countries in key fields such as education, innovation, and ICT. It helps policymakers, researchers, civil society, and the private sector promote knowledge-based societies and bridge the knowledge gap. GKI highlights how emerging trends in technology, education, and innovation are radically reshaping societies by leveraging knowledge infrastructure to open new opportunities in the form of jobs and livelihoods and drive sustainable development forward (Abdelghani, 2021/2022, p. 50).

Chapter Two: Theoretical Framework of Financial Technology

Financial technology is one of the new variables that have recently emerged in the banking system.

First: The Nature of Financial Technology

1. The Concept of Financial Technology

Several definitions have been provided for financial technology, including:

The Financial Stability Board defined Fintech or financial technology as: *"Financial innovations using technology that can create new business models, applications, processes, or products that have a material impact on financial markets and institutions and on the inclusion of financial services."* (Rafiqa, Souria, & Ahmed, 2021, p. 165).

The Institute of Digital Research in the Polish capital, Delpin, defined it as: *"Modern technological inventions and innovations in the financial sector. These inventions include a set of digital programs used in banks' financial operations, including transactions with customers, financial services, and other banking operations."* (Zahra & Dahman, 2020, p. 70).

It is also defined as: *"Those products and services that rely on technology to improve the quality of traditional financial services. This technology is characterized by speed, ease, and low cost, enabling a larger number of individuals to access it."* (Iman & Hayat, 2023, p. 140).

From the above definitions, we can conclude that financial technology refers to products and services that rely on modern technologies and are used to improve the quality of traditional financial operations and services, affecting financial sector institutions.

2. Characteristics of Financial Technology

The characteristics of financial technology are as follows (Saida, 2019, pp. 229–230):

- Financial technology consists of a set of skills, knowledge, methods, and banking and financial techniques.
- Financial technology is a means used by financial and banking institutions to achieve their set goals.
- Banking financial services are the primary area for applying this technology.
- The application of financial technology is not limited to providing financial and banking services but extends to administrative methods as well.

Second: Objectives and Importance of Financial Technology

1. Objectives of Financial Technology

Financial technology adopted by financial institutions and banks seeks to achieve several goals, including (Mustafa Salam, Mohammed Karim, & Sinan Abdullah, 2019, p. 127):

- Reducing the costs of financial services to attract and capture new customers and expand the market share of financial and banking institutions by lowering entry barriers to the market and increasing operational efficiency.
- Delivering financial services in the shortest possible time, with greater ease and security.
- Adopting and using financial technology to provide services aims to overcome spatial boundaries.
- Predicting, identifying, and reducing risks and learning how to avoid them.

2. Importance of Financial Technology

Financial technology has a real ability to change the structure of financial services and make them faster, cheaper, safer, more transparent, and more accessible. Its importance can be summarized as follows (Tal Ajlouni & Al Hakim, 2018, p. 09):

- Increasing access to capital, as financial technology helps provide credit to borrowers—especially small and medium-sized enterprises—that do not have access to bank loans, opening new possibilities for equity financing.
- Better and more customized financial and banking services; financial institutions can benefit from the specialization of Fintech companies to improve their traditional offerings and provide them in a cost-effective and flexible manner.
- Financial technology contributes to achieving financial stability through increased competition in the Fintech field. The more technologically advanced these institutions are, the greater their competitive ability at both regional and international levels.
- Innovative technologies help financial institutions comply with regulatory requirements and pursue objectives (such as prudential requirements, including reporting and consumer protection).

Third: Sectors, Fields, and Companies of Financial Technology

1. Financial Technology Sectors

Fintech companies offer a wide range of financial services covering various sectors, which can be summarized as follows (Saida, 2019, pp. 729–730):

• Payment Services:

Include the most flexible and active banking activities, offering customers various payment methods.

• Retail Banking Services:

Includes simple banking services provided to individuals via the Internet without a physical branch presence, with low costs and personal financial management tools and budgeting solutions.

• Investment and Financing:

Fintech attracts individuals' savings by facilitating loans and providing crowdfunding platforms for institutions, either in the form of equity investment or loans, and also offers online financial investments for individuals.

• Bank Data-Based Services:

Provide banking sector solutions by collecting and analyzing large databases to manage customer relationships.

• Services Directed to Banks and Companies:

Fintech offers many solutions to improve business management, including those aimed at banks such as blockchain-based systems that develop solutions for transaction recording, information processing, tax management, and risk management.

Among the most prominent sectors adopted by companies in the field of financial technology in general are payments and money transfers, insurance, and cryptocurrency. The payment sector is the most widespread. Wealth management is also included, and the following table illustrates this (Zineb & Zahraa, 2019, p. 404).

Table 01: Financial Technology Sectors Across the World

	Money Transfers and Payments	Financial Planning	Saving and Investment	Borrowing	Insurance
China	83%	22%	58%	46%	47%
India	72%	21%	39%	20%	43%
Brazil	60%	20%	29%	15%	38%
Australia	59%	15%	27%	13%	32%
United Kingdom	75%	13%	25%	12%	31%

ource: Zineb Hamdi, Zahraa Oukacem, *Basic Concepts on Financial Technology*, *Al-Ijtihad Journal for Legal and Economic Studies*, Vol. 08, Issue 01, 2019, p. 404.

2.Fintech Companies

Concept of Fintech Companies:

Fintech companies refer to startups, financial firms, and technology companies that aim to replace or enhance the use of traditional financial services through modern means (Mohammed, 2020, p. 4040), opening the field for competition against traditional financial companies. With the development and success achieved by these companies, as well as the high level of responsiveness they received, they have begun to pose a threat to traditional financing models. Some even predict their ability to overturn the traditional banking work model (Wahiba, 2018, p. 144).

According to the nature of the service provided, fintech companies can be classified into the following types (Abdelkarim Ahmed, 2019, pp. 25–26):

- Large Financial Institutions:

These are well-established traditional financial institutions that have contributed significantly to the development of the financial sector throughout history. By investing in research, development, and innovation to continue their operations and improve their systems, and to maintain their clients and meet their advanced technical needs, these institutions have strongly entered the field of fintech investment.

- Startups:

Startups are considered a major source of inspiration and are the strongest drivers and developers of fintech among other types of fintech companies. This is especially true as there is now a global trend of regulators and supervisors adopting these companies. These entities have created what is known as "tech accelerators," which are programs aimed at providing an incubating, funding, and supportive environment for fintech through experimental labs and provided facilities.

- Tech Giants:

Although the core business of tech companies is not the financial sector, they have heavily invested in the financial field. This has allowed many companies to own their own payment and transfer platforms, becoming competitors to major financial institutions. The figure below shows the main sectors exploited by fintech companies to offer their services.

Chapter Three: The Reality of Digital Financial Inclusion in Algeria

First: Analysis of Digital Financial Inclusion Indicators in Algeria for the Period from 2011 to 2021

1- Analysis of the Indicator of the Number of Adults Using the Internet or Mobile Phones to Access Accounts in Formal Financial Institutions

This indicator is used to express the number of adults who use mobile phones and the Internet during a specific period. The table below shows the percentage of adults using the Internet or mobile phones to access accounts in formal financial institutions during the period from 2017 to 2021 in Algeria.

Table 02: Percentage of Adults Using the Internet or Mobile Phones to Access Accounts in Formal Financial Institutions

Indicators	017	021
Percentage of adults using the Internet or mobile phones to access accounts in formal financial	5%	-

Indicators	017	021
institutions – Adults –		
Percentage of adults using the Internet or mobile phones to access accounts in formal financial institutions – Males –	3%	4%
Percentage of adults using the Internet or mobile phones to access accounts in formal financial institutions – Females –	1%	3%
Percentage of adults using the Internet or mobile phones to access accounts in formal financial institutions – Youth (15-24) –	1%	3%
Percentage of adults using the Internet or mobile phones to access accounts in formal financial institutions – Adults (+25) –	3%	4%

Source: (World Bank, 2022)

It is noted from the table above that the percentage of adults using mobile phones or the Internet to access banking and financial services in Algeria in 2017 reached 5%, while it reached 7% in 2021. A gap is also observed with a deficit value estimated at 1% in favor of males, and a gap of double value in favor of adults who use the Internet and mobile phones to access financial and banking services compared to the youth group, which was estimated at 1% in 2021. In 2017, the percentage of adults who used the Internet or mobile phones reached 3% compared to 1% for youth. The highest percentage was recorded in 2021 in favor of adults at 4% compared to 3% for youth.

These low recorded percentages are due to the weakness of telecommunications infrastructure and the Algerian banking system's inability to keep up with the rapid and modern developments in electronic payment methods. Moreover, the regulation of electronic banking activities requires laws and legislation, which are largely lacking and insufficient in Algeria, especially those regulating electronic banking transactions.

2- Indicator of the Percentage of Adults Who Made or Received Digital Payments During the Past Year

This indicator is used to assess the extent of adults' ability to make and settle their payments over a specified period. The table below shows the percentage of adults who made or received digital payments during the past year in Algeria during the period from 2014 to 2017.

Table 03: Percentage of Adults Who Made or Received Digital Payments During the Past Year

Indicators	2014	2017
Percentage of adults who made or received digital payments during the past year – Adults –	25%	26%
Percentage of adults who made or received digital payments during the past year – Males –	34%	32%
Percentage of adults who made or received digital payments during the past year – Females –	17%	20%

Source: (World Bank, 2022)

It is observed that the percentage of digital payments made or received in Algeria reached 25% in 2014 and 26% in 2017. A gender gap of 12% in favor of males was also observed in 2017. These low rates in digital payments or receipt in Algeria are due to the population's wide reliance on cash. This creates challenges for the Central Bank of Algeria as a supervisory and regulatory authority in the field of promoting digital financial inclusion. These challenges involve the need to create a legal environment that encourages access to financial services and products, expanding their provision beyond bank branches, and benefiting from new technologies that facilitate access to financial services at lower costs and ensure their availability to all segments of society – including the poor, low-income individuals, and financially excluded persons – by offering them through ATMs, point-of-sale terminals, mobile phones, and electronic payment stations.

Second: Obstacles to Digital Financial Inclusion in Algeria

Among the most important obstacles hindering the enhancement and expansion of digital financial inclusion in Algeria, we mention the following (Tariq and Sabrina, 2023, p. 710):

- Underdeveloped financial sector infrastructure to the extent necessary to increase access to finance: despite the relative improvement in financial sector infrastructure in recent times, many still lack the basic components that enable increased access to finance.
- Financial literacy: plays an active role in changing mindsets. Individuals from poor classes focus heavily on their lack of financing, while educated individuals focus on technical aspects such as the cost of financial services and trust in the financial and banking system.
- Lack of a specific financial and legal classification for microfinance institutions in Arab countries, where they are registered as NGOs, making it difficult to establish a supervisory framework to regulate microfinance, whether by the central bank or an independent supervisory body. These obstacles have reduced transparency in the microfinance sector and limited its ability to mobilize the necessary financial resources for its operations, whether by attracting deposits or borrowing.

Third: Algeria's Efforts to Support Digital Financial Inclusion

Among the most important efforts made by the Algerian government to promote digital financial inclusion are:

- Financial education: Every country must pay attention to financial education by developing and drafting a comprehensive national strategy focused on enhancing financial education and awareness. This should be done through the participation of several governmental entities alongside the private sector and relevant stakeholders. The aim is to promote financial knowledge among citizens, especially targeted groups such as youth, women, and micro, small, and medium enterprises. Financial education helps individuals make sound and well-considered investment decisions in their various financial dealings with the least amount of risk. It also aims to establish a comprehensive financial education system starting from scratch to achieve a financially literate society and enhance the awareness of all segments of society (Nabil, 2019, p. 175).

- Improving access to financial services: Expanding the use of new technologies and early business models is one of the most important ways to promote the provision and delivery of financial services such as bill payment and financial transactions via mobile phones (Nadia, 2021, p. 26).
- Developing financial infrastructure: Economic thought attaches great importance to financial intermediation services due to their contribution and importance in generating economic growth. These priorities include (Mohamed, Redouane, and Omar, 2019, p. 130):
  - Legislative environment: through the issuance and amendment of previous instructions and regulations to align with financial inclusion directives, which helps provide an appropriate legislative environment that supports the principle of financial inclusion.
  - Outreach: i.e., expanding the network of financial service providers and focusing on establishing branches or offices for service providers and setting up access points for financial services such as bank agents and mobile banking services, in accordance with national regulations.
  - Developing payment and settlement systems: Developing small-value payment and settlement systems facilitates the execution and settlement of financial and banking transactions between providers in a timely manner.
  - Providing comprehensive data: including historical credit records for individuals and SMEs, as well as a database for registering movable assets, and taking necessary measures to ensure that service providers and clients obtain the required information to ensure transparency and protect their rights.

Conclusion:

Through our analysis of this research paper, it became clear that financial technology plays a very important role in promoting financial inclusion, as it is used as a mechanism to enhance its levels. This paper concluded with several results, the most prominent of which are:

- Financial inclusion works to provide a wide range of financial services and products to various segments of society, including the financially excluded such as the poor and low-income earners. These services are characterized by low cost and high quality and are provided to them easily and conveniently.
- Financial inclusion has three dimensions: access to financial services, use of financial services, and quality of financial services.
- To properly evaluate the levels of financial inclusion in a country, a set of specific measurement indicators is used.
- Financial technology is one of the most important modern variables that have emerged in the financial and banking sector, imposing the need to keep up with new and sudden changes.
- Financial technology provides a variety of services by relying on a set of technologies, which makes these services acquire a digital and effective nature.
- Algeria still records low levels in digital financial inclusion.

• The process of promoting digital financial inclusion in Algeria faces a set of obstacles and challenges.

Proposals and Recommendations:

Based on the results reached, the following proposals and recommendations can be presented:

Proposals and Recommendations:

• The necessity of conducting awareness campaigns to introduce financial technology and digital financial inclusion, as they are new concepts;

• The necessity of enacting laws and legislation that encourage financial technology and digital financial inclusion in Algeria;

• The Algerian state must intensify its efforts to raise the levels of digital financial inclusion in Algeria;

• The necessity of training and educating banking employees and introducing them to financial technology and digital financial inclusion.

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