



The Role of Financial Technology in promoting Financial Inclusion to Achieve Sustainable Economic Growth

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Abstract:

This study investigates the transformative role of Financial Technology (FinTech) in promoting financial inclusion as a key driver of sustainable economic growth. Adopting a descriptive-analytical approach, it reviews the evolution of FinTech from 1.0 to 3.0. The study analyzes FinTech's capacity to overcome traditional barriers to financial access, particularly for underserved populations. It emphasizes digital financial inclusion as a vital mechanism for poverty reduction and enhanced economic resilience, as demonstrated during the COVID-19 pandemic. The paper also addresses challenges of this digital transition, including regulatory gaps and cybersecurity risks.

Keywords: Financial inclusion; financial technology; digital financial inclusion; sustainable economic growth.

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1. Introduction

The financial sector is widely recognized as a fundamental pillar of economic stability and development. Traditionally, access to formal financial services has been constrained by physical barriers, high costs, and stringent documentation requirements, leaving a significant portion of the global population unbanked or underbanked. Consequently, financial inclusion has emerged as a global policy priority, acknowledged by international organizations as an indispensable enabler for achieving the Sustainable Development Goals (SDGs), particularly those related to poverty reduction and economic equality.

In recent years, the rapid evolution of Financial Technology (FinTech) has revolutionized the financial landscape, disrupted traditional banking models, and offered innovative solutions to age-old challenges. By leveraging mobile connectivity, big data, and the internet, FinTech has democratized access to financial services, making them more affordable, accessible, and efficient. The COVID-19 pandemic further accelerated this digital transformation, highlighting the critical necessity of digital financial services when physical interactions were restricted. This shift has moved the global conversation beyond simple "access" to the "usage and quality" of financial services as drivers of sustainable growth.

To explore these dynamics and achieve the objectives of this study, a descriptive-analytical approach was adopted. This methodology relies on a comprehensive review of theoretical literature and recent international reports (such as Global Findex and GSMA data) to analyze the conceptual framework. The study aims to describe the evolution of FinTech, examine its role in removing traditional barriers to financial access, and analyze its theoretical impact on sustainable economic growth without relying on an econometric model. This approach allows for a deep understanding of the

mechanisms through which FinTech influences financial inclusion indicators globally.

However, despite the promising potential of this digital shift, the integration of technology into finance is not without challenges, including cybersecurity risks, regulatory gaps, and issues related to digital literacy. Therefore, understanding the relationship between FinTech adoption and inclusive growth requires a focused investigation. Based on this context, the main research problem of this study can be formulated as follows:

To what extent does Financial Technology contribute to promoting financial inclusion as a mechanism for achieving sustainable economic growth?

1.1 Research Sub-Questions and Hypotheses

The study focuses on the following sub-questions:

1. To what extent does FinTech reduce the geographical and operational barriers to financial services?
2. How does digital financial inclusion contribute to increasing economic participation among underserved populations?
3. What are the major regulatory and cybersecurity challenges affecting sustainable fintech development?

Research Hypotheses

H1: The expansion of FinTech services positively influences financial inclusion indicators.

H2: Digital financial inclusion contributes significantly to sustainable economic growth through improved access and usage of financial services.

H3: Weak regulatory frameworks and low digital literacy negatively affect the effectiveness of FinTech adoption.

1.2 Research Methodology:

The study integrates a contextual analytical overview of Algeria as a developing economy undergoing digital financial transformation. This methodological approach enables the paper to examine both theoretical dimensions and practical indicators without relying on econometric modelling.

This study adopts a descriptive analytical research design based on a qualitative review of academic literature, international reports, and institutional statistics related to Financial Technology (FinTech) and financial inclusion. The study relies on secondary data sources, including reports issued by the World Bank, GSMA, IMF, and GIE Monétique, in addition to peer-reviewed articles and official Algerian legal documents. The selection criteria focused on recent and reliable sources addressing digital financial inclusion, fintech adoption, and sustainable economic growth between 2015 and 2025. The analytical method employed consists of comparative and thematic analysis to identify the mechanisms through which fintech contributes to expanding financial inclusion and supporting sustainable economic growth.

2. The Rise of FinTech and Its Objectives

2.1 Definition of FinTech

The term "FinTech," which stands for "Financial Technology," originates from the "Financial Services Technology Consortium," a project launched by Citigroup in 1993 to promote technological collaboration. FinTech is often defined using mobile devices and various technological platforms to access banking services, receive transaction alerts, and manage debit and credit notifications through

push notifications via SMS or other communication methods (surianom et al., 2018, p. 224).

Essentially, FinTech refers to companies that offer financial services through technological innovations, seeking to bypass traditional financial institutions by utilizing online and mobile channels. The International Organization of Securities Commissions defines "FinTech" as encompassing a variety of innovative business models and emerging technologies that have the potential to transform the financial services landscape (chemseddine, 2021, p. 702).

FinTech can be regarded as an evolving financial services industry that covers areas such as third-party payments, lending, insurance, risk management, and authentication. Additionally, it signifies companies that provide technology-driven financial services or solutions that represent a new paradigm (Erika et al., 2018, p. 4).

Currently, the FinTech industry is comprised of five key sectors: finance and investment, operations and risk management, payments and infrastructure, data security and monetization, and client interfaces (surianom et al., 2018, pp. 224-225) Therefore, FinTech can be characterized as solutions that integrate innovative business models and technologies to facilitate and/or enhance the delivery, distribution, and/or infrastructure of financial services (Tahanout, 2021, p. 710).

2.2 The Development of FinTech

The evolution of financial technology in the financial and banking sectors can be categorized into three major phases (Bensaad et al. , 2021, pp. 1009-1010):

- **FinTech 1.0 (1867-1967):** This phase began with the establishment of the first transatlantic cable in 1867, enabling telegraphic communication between London, Paris, and New York. Over time, this network expanded to connect other

countries, laying the foundation for a global infrastructure that linked people, media, governments, and financial markets.

- **FinTech 2.0 (1967-2008):** Marked by the advent of digital transformation, this period introduced the use of computers and automated teller machines (ATMs). Payment systems like SWIFT were developed, facilitating large-scale online transactions. In 1971, the NASDAQ became the first electronic stock exchange, advancing the digitization of the stock market, particularly during the early 1980s. However, this era also witnessed significant economic disruptions, including three major market crashes: the global stock market crash known as Black Monday in 1987, the bursting of the dot-com bubble in 1999, and the 2008 financial crisis caused by widespread mortgage defaults, which led to a global market collapse.
- **FinTech 3.0 (2008-Present):** In the aftermath of the 2008 financial crisis, regulatory reforms were introduced, resulting in higher compliance costs and reduced profitability for traditional financial institutions. Many professionals who lost their jobs during this period founded fintech startups, offering innovative financial solutions. This phase also saw the rise of cryptocurrencies, mobile payment systems, and digital financial platforms, transforming the way financial services are delivered.

2.3 Fundamental Skills of the Fintech Revolution and Their Objectives

2.3.1 Core Skills of Fintech

Fintech as a discipline is based on three fundamental concepts (Benalkama , 2022, p. 136):

- ✓ Data Capture: The process of collecting and storing data and information about individuals, companies, or activities.
- ✓ Data Analysis: Methodologies and tools for analysing large and growing datasets to extract insights that can inform future decisions.
- ✓ Intelligence and Implementation: Utilizing and applying data-driven insights to enhance existing services and activities or to create new services that do not currently exist.

2.3.2 Objectives of Fintech

Generally, the goals of utilizing fintech can be summarized as follows (Naili & Lemouchi , 2022, p. 108):

- ✓ Reduction of Correspondent Search Costs: Lowering expenses related to finding counterparties.
- ✓ Achieving Economies of Scale: In the collection and utilization of large datasets.
- ✓ Cost-effective and Secure Information Transmission: Ensuring cheaper and more secure data transfer.
- ✓ Lower Verification Costs: Reducing expenses associated with verification processes.

2.4 Significance of Fintech

Financial technology involves the development of systems that model, assess, and process financial products such as bonds, stocks, contracts, and money. Financial products are at a minimum represented by dimensions of price, time, and credit. Financial systems incorporate trading systems and trading technology to facilitate the buying and selling of products at various times and market paces, including the simultaneous arbitrage of buying and

selling the same product across different markets (Roy S, Freedman, 2006, p. 01).

The emergence of fintech addresses traditional issues within the financial industry that often fails to serve the wider community. Traditional finance has limitations due to strict regulations that restrict service to certain areas. Fintech not only encourages financial institutions to enhance resource allocation efficiency and risk management but also challenges the current regulatory framework. It aids various stakeholders in managing and controlling their financial operations through diverse tools, devices, and software (Bachiri, 2022, pp. 387-388).

The adoption of new technologies offers significant benefits in terms of well-being, potentially lowering financial intermediation costs related to loans, payment systems, financial advice, and insurance, while providing enhanced products for consumers (Senouci et al., 2021, p. 375).

Fintech technology is a critical driver of efficiency in the financial sector for several reasons. It enhances borrower screening by utilizing statistical models based on big data to address information asymmetries inherent in banking activities. Additionally, fintech firms employ advanced interest rate models for mortgage loans, enabling more effective pricing and targeting, particularly for low-risk borrowers who prioritize loan terms. Unlike traditional institutions, fintech companies are unburdened by outdated technologies and operate with a culture of efficiency and innovation, supported by their smaller size and greater adaptability. Moreover, fintech plays a significant role in promoting financial inclusion by expanding access to financial services in underdeveloped regions and among underserved populations, including small businesses (Senouci et al., 2021, p. 376).

2.5 Challenges and Risks of Fintech

The various risks and challenges associated with Fintech can be summarized as follows (Bachiri, 2022, pp. 389-390):

- ✓ **Accessibility vs. Security:** While fintech makes finance more accessible to everyone, it also faces the threat of hacking, a process that exploits technology in unintended ways.
- ✓ **Client Education:** Financial service providers must equip their clients and the public with knowledge and understanding of how to use financial technology effectively.
- ✓ **Responsible Innovation:** Digital financial innovation should be directed towards creating responsible and secure financial products that prioritize consumer protection and manage risks effectively.
- ✓ **Risk Management Research:** The European Commission for the period 2019-2020 is conducting research on fintech risk management models to share insights with European regulators, fintech companies, and banks.
- ✓ **Financial Literacy Challenges:** One significant challenge fintech faces in its quest for greater financial inclusion is financial illiteracy, particularly in rural and impoverished communities, where achieving holistic education is difficult. This issue is costly, as individuals in these communities often lack trust in efforts to persuade them to adopt digital financial services.

3. The Significance of Financial Inclusion

3.1 Conceptual Framework

Financial inclusion is articulated as "a condition in which individuals, including those from low-income backgrounds, and enterprises, particularly the smallest ones, have access to and utilize a comprehensive range of quality formal financial services (such as payments, transfers, savings, credit, and insurance) that are offered

responsibly and sustainably by a variety of providers operating within a suitable legal and regulatory framework" (kheira Tahanout, 2021, p. 713).

In a similar vein, the UNCDF (United Nation Capital Development Fund) defines financial inclusion as "achieved when all households and enterprises can access a broad spectrum of financial services (including savings, credit, leasing, factoring, mortgages, insurance, pensions, payments, domestic transfers, and international remittances) at a reasonable cost, provided by sustainable financial institutions functioning in a regulated environment" (Oumarou, 2019, p. 14). Ultimately, financial inclusion signifies that individuals and businesses have access to valuable and affordable financial products and services tailored to their needs (transactions, payments, savings, credit, and insurance), delivered in a responsible and sustainable manner (Rakhrouf & Benilles, 2021, p. 301) .

3.2 The Importance of Financial Inclusion and Its Objectives

Efforts aimed at promoting financial inclusion seek to ensure that all households and enterprises, regardless of their income level, have access to appropriate financial services necessary for enhancing their quality of life and can utilize these services effectively (Rakhrouf & Benilles, 2021, p. 301).

Thus, financial inclusion serves several key objectives, including (Babas & Fali , 2021, p. 136):

- ✓ **Economic Growth:** Financial inclusion stimulates economic growth by mobilizing greater savings into productive investments.
- ✓ **Financial Literacy:** It enhances financial literacy among vulnerable and marginalized groups in society through

financial education, thereby reducing reliance on unreliable and costly financing options.

- ✓ Innovation: Financial inclusion fosters innovation by promoting cost-effective delivery of financial products through the utilization of technology.
- ✓ Market Competition: It encourages competition and provides market-based incentives for sustainable financial access.

3.3 Measurement of Financial Inclusion

The measurement of financial inclusion is fundamentally dependent on how the concept is defined, as well as the selection and identification of indicators that represent the various dimensions of the financial system. Today, researchers and policymakers require specific indicators to assess the level of financial inclusion in each country, which facilitates their work (Abbes, 2021, pp. 13-14). Consequently, the indicators for measuring financial inclusion can be divided into two categories: fundamental indicators of financial inclusion and the various analytical methods for assessing these measures.

3.3.1 Fundamental Indicators of Financial Inclusion

Data play a critical role in the policy-making process, from conception and implementation to monitoring and evaluation. By employing rigorous, objective, and reliable key performance indicators, policymakers can accurately diagnose the state of financial inclusion, establish goals, identify existing barriers, formulate effective policies, and monitor and assess the impact of these policies. To gauge the extent of financial inclusion, it is essential to identify indicators that represent the levels of different dimensions of the financial system, such as usage, accessibility, quality, and cost. Therefore, researchers and policymakers must have access to coherent and reliable information regarding the levels within a financial system. This access enables them to define their programs and policies,

develop strategies, and set action objectives to overcome barriers to financial system access.

According to the World Bank (2012), "financial inclusion is measured using indicators that summarize information provided by users of products and services, or information provided by financial providers through surveys of financial institutions, or through reports to financial regulators." These indicators are derived from country-led data collection, including data from financial institutions gathered by financial regulators. There are several initiatives aimed at providing transnational data to regulators by developing standardized indicators of financial inclusion (Abbes, 2021, pp. 14-15).

3.3.2 Analytical Methods for Measuring Financial Inclusion

In measuring financial inclusion, two fundamentally distinct methods can be identified: one based on the separate analysis of financial access indicators and the other on the construction of a multidimensional financial inclusion index (Abbes, 2021, p. 9).

✓ Analysis of Financial Access Indicators Separately

To measure the level of financial inclusion or access, numerous studies have often used the number of adults with bank accounts as a key metric. While this measure is relevant, focusing solely on access to financial institutions overlooks other significant aspects of financial inclusion, such as geographical coverage, usage, and the quality of financial services. Various indicators have been employed in studies, including the number of bank branches per 1,000 km², the number of bank branches per 100,000 people, the number of ATMs per 1,000 km², the number of ATMs per 100,000 people, the number of loans per 1,000 people, the average loan size relative to GDP per capita, the number of deposits per 1,000 people, and the average deposit size relative to GDP per capita.

While these indicators provide valuable insights into financial inclusion, they only offer partial information regarding the inclusivity of the financial system. Thus, if financial inclusion indicators are analysed in isolation, it may lead to misinterpretations of the overall levels of financial inclusion in the economy, potentially omitting critical information about the functioning of the financial system. Therefore, "a comprehensive and holistic measure, such as the financial inclusion index, is necessary for a clear interpretation of financial inclusion" (Abbes & Sadi, 2018, pp. 9-10) .

✓ **Construction of a Multidimensional Index**

The separate indicators of financial access provide only partial and incomplete information regarding the inclusivity of the financial system. In a study conducted by Sarma in 2008, three dimensions were used to calculate the financial inclusion index: banking penetration measured by the number of bank accounts per 1,000 adults, availability of banking services measured by the number of bank branches per 100,000 adults and the number of ATMs per 100,000 adults, and the utilization of banking products and services measured by the ratio of deposits to GDP plus the ratio of loans to GDP.

Further studies have been conducted in this vein to construct a financial inclusion index using separate financial inclusion indicators. Notably, there is a clear consensus among researchers that the construction of a multidimensional index plays a crucial role in measuring financial inclusion. Such a multidimensional index can be employed to compare levels of financial inclusion and track the progress of financial inclusion policy initiatives across economies (Abbes, 2021, pp. 17-18).

4.The Influence of FinTech on Financial Inclusion

4.1 The Transformative Impact of FinTech on Financial Services

The concept of FinTech has reshaped the financial ecosystem, introducing innovative trends that are gradually redefining the competitive landscape. According to the report "Beyond FinTech", eight pivotal trends have been identified as key drivers of this transformation (Senouci et al., 2021, pp. 374-375) These include:

- ✓ **Cost Commoditization:** Financial institutions are increasingly leveraging advanced technologies to streamline operations, significantly lowering costs, and enhancing efficiency.
- ✓ **Redistribution of Benefits Across Value Chains:** Emerging financial technologies are fostering the creation of new value streams and benefits within and between value chains, redistributing the traditional power dynamics in the industry.
- ✓ **Customer Experience Ownership:** Distributors and technology-driven platforms are positioned strategically as key stakeholders in delivering and owning superior customer experiences, which are becoming central to competitive differentiation.
- ✓ **Platform Ecosystems:** The development and adoption of multi-service platforms serve as global distribution and exchange channels, enabling financial institutions to offer integrated banking, investment, and payment services.
- ✓ **Data Monetization Strategies:** Institutions are capitalizing on data-driven insights, employing advanced technologies to monetize data assets and gain competitive advantages.

- ✓ Automation and AI Integration: The rise of automation, particularly through Artificial Intelligence, is transforming human resource practices, operational workflows, and decision-making processes in financial services.

4.2 The Interconnection Between FinTech and Financial Inclusion

Financial inclusion, defined as the provision of formal financial services to underserved and unbanked populations, plays a pivotal role in reducing poverty and fostering economic growth. To comprehensively explore the intricate relationship between financial technology (fintech), financial inclusion, and economic growth, it is imperative to develop more advanced and nuanced theoretical models. Two primary mechanisms the financial inclusion channel and the fintech diffusion channel offer valuable frameworks for analysing this dynamic. The fintech diffusion channel underscores the capacity of the financial services sector to adopt and integrate fintech innovations, thereby enhancing operational efficiency and productivity. This, in turn, contributes to improved economic performance and elevated living standards by optimizing resource allocation and reducing transaction costs (Kanga et al., 2022).

On the other hand, the financial inclusion channel focuses on the transformative role of fintech in expanding access to financial services for underserved and unbanked populations. By facilitating broader access to savings mechanisms, credit, and investment opportunities, fintech drives greater financial participation and capital mobilization. This channel is particularly significant in directing investments toward high-impact sectors and fostering inclusive economic growth, which can reduce inequality and stimulate sustainable development within the economy (Kanga et al., 2022). A notable example of FinTech's impact on financial inclusion is its evolution from basic electronic payments and peer-to-peer lending to advanced services like robot-advisory, cryptocurrency, and blockchain technology (chemseddine, 2021, p. 702). These innovations have

disrupted traditional banking models, offered competitive alternatives, and increased access for underserved populations (Nada, 2024, p. 74).

4.3 Digital Financial Inclusion: A Pathway to Broader Access

Digital financial inclusion as a subset of financial inclusion, refers to the provision and utilization of formal financial services through digital platforms, particularly for historically excluded or underserved populations, This approach emphasizes affordability, customer-centricity, and provider sustainability (Kate & Timothy, 2015, p. 51).

■ Models of Digital Financial Service Providers

The ecosystem of digital financial inclusion involves various service providers, categorized based on their contractual relationships with customers:

Table 1. service providers.

Provider Type	Service Offerings
Universal Banks	Simplified accounts for payments, funds transfer, and value storage via mobile devices or POS
Mobile Network Operators (MNOs)	Issuance of electronic money and facilitation of digital payments.
Niche Banks	Specialized financial products and services accessible digitally
Electronic Money Issuers	Non-bank entities offering digital wallets and payment solutions.

Source: Compiled by the researcher team.

These providers operate through three core components:

- Digital Transaction Platforms: Enable secure and efficient processing of transactions.

- Agent Networks: Act as intermediaries, extending services to remote and underserved areas.
- Customer Access Devices: Mobile phones, payment cards, and other digital tools facilitating user interaction.

■ Addressing Challenges and Risks

While digital financial inclusion offers numerous benefits, it is not without challenges. Some of the key risks include (Nada, 2024, pp. 77-78) :

- Regulatory Gaps: Rapid financial inclusion without adequate regulations could lead to financial instability, as seen during the 2007 global financial crisis.
- Digital Infrastructure Disparities: Unequal access to digital tools and networks exacerbates inequalities.
- Financial Literacy Deficiencies: Low levels of financial and digital literacy hinder the effective utilization of FinTech services.
- Unregulated Lending Practices: Predatory lending and insufficient oversight of digital lending platforms pose risks to financial stability.
- Cybersecurity Threats: The increasing reliance on digital platforms exposes users to potential breaches and fraud.

Despite these challenges, digital financial inclusion has proven instrumental in mitigating crises, such as during the COVID-19 pandemic. Examples include facilitating contactless transactions, flexible loan repayments, and targeted government relief measures (Tao Wu, 2022). Governments and regulators must prioritize investments in infrastructure, financial literacy programs, and regulatory frameworks to address these challenges.

Table 2. summary of the key enablers and barriers to digital financial inclusion.

Key Enablers	Barriers
Investment in digital infrastructure	Unequal access to digital tools and internet connectivity.
Financial literacy programs	Low levels of digital and financial literacy among underserved populations.
Robust regulatory frameworks	Risks from unregulated lending practices and predatory financial services.
Cybersecurity measures	Vulnerability to data breaches and fraud in digital ecosystems.

Source: Compiled by the researcher team.

To be concluded, it can be said that FinTech and digital financial inclusion hold immense potential for fostering equitable financial access, these advancements must be accompanied by policy reforms, consumer protection measures, and investments in technological infrastructure to ensure sustainable and inclusive growth.

5. Financial Inclusion and economic growth

Economic growth refers to the increase in the production of goods and services within a specific country over a defined period, provided it leads to a rise in the average per capita real income. It is measured through a set of indicators, including the Gross Domestic Product (GDP), which represents the economic growth rate and reflects the total value added by all resident producers in the economy, accounting for product taxes and deducting subsidies not included in the product value. Other indicators include the financial inclusion index, derived from the analysis of previously discussed components, and investment or capital stock, which, according to the World Bank, encompasses total expenditures on fixed asset accumulation, land

improvements, infrastructure development, and net changes in inventory levels. Additionally, population density or demographic growth, reflecting poverty and unemployment rates, and the official exchange rate, representing the value of the local currency against major foreign currencies, are key indicators used to assess economic performance (Riham Ahmed, 2020, p. 474).

A study by Sethi and Acharya (2018) investigated the dynamic relationship between financial inclusion and economic growth in both developed and developing countries. Their findings revealed a significant long-term positive relationship between financial inclusion and economic growth across 31 countries, alongside evidence of a bidirectional causal link, positioning financial inclusion as a fundamental driver of economic development (Rakhrour & Daham, 2021, p. 481). This relationship can be further explored through the following dimensions:

5.1 Financial Access and Economic Growth

Research by Inoue and Hamori (2016, pp. 743–753), using data from 37 sub-Saharan African countries (2004–2012), confirmed that improved access to financial services significantly boosts economic growth in the region. While the World Bank initially targeted Universal Financial Access by 2020, the focus has shifted towards the post-pandemic landscape and the 2030 Sustainable Development Goals (SDGs). According to the latest Global Findex Database (2021), account ownership worldwide increased to 76% of adults, up from 51% in 2011. The COVID-19 pandemic served as a catalyst for this digital adoption; in developing economies, approximately 40% of adults who paid merchants in-store or online using a card, phone, or the internet did so for the first time after the start of the pandemic (Demirgüç-Kunt et al.2022).

Furthermore, the mobile money sector has shown resilience and exponential growth, becoming a primary driver of financial inclusion. Recent data from the GSMA (2025) reveals that registered mobile money accounts globally surpassed 2 billion in 2024, with transaction

values reaching approximately \$1.68 trillion annually (GSMA, 2025). This digital expansion is further evidenced by the global FinTech market's trajectory, which was valued at roughly \$340 billion in 2024 and is projected to exceed \$1.1 trillion by 2032. These figures underscore the pivotal role of FinTech not just in providing access, but in fostering the sustainable economic growth envisioned in the SDGs (SDGs, 2024).

5.2 Financial Usage and Economic Growth

Expanding the use and quality of financial services enhances equity and economic potential. Studies demonstrate that innovative financial tools empower marginalized groups, such as the poor, women, and youth enabling them to undertake productive investments that increase incomes and stimulate economic activity. Access to basic financial accounts facilitates broader investment opportunities, which, in turn, drives growth (Guru & Yadav , 2019, pp. 115-118).

5.3 Financial Depth and Economic Growth

The relationship between financial depth and economic growth is multifaceted and complex, as outlined by Aliu and Abazi Empirical evidence suggests that financial depth positively influences economic growth, as demonstrated through cross-sectional and time-series analyses in both developed and developing economies. However, in contrast, panel data studies from recent decades indicate that financial depth can have a negative impact on growth in developing countries. Additionally, a nonlinear relationship has been identified, where financial depth initially fosters economic growth but becomes detrimental when financial systems surpass certain levels of development, reflecting the nuanced and context-dependent nature of this relationship.

5.4 The Status of FinTech and Financial Inclusion in Algeria: A Case Overview

To contextualize the theoretical relationship between FinTech and economic growth, Algeria represents a compelling case study of a developing economy in transition. The Algerian financial ecosystem has recently undergone significant structural reforms, most notably the enactment of the Monetary and Banking Law No. 23-09 in June 2023. This legal framework marked a pivotal turning point by formally recognizing "Digital Banks" and "Payment Service Providers (PSPs)," thereby ending the monopoly of traditional banking models and opening the market to innovative FinTech startups (Official Gazette of the Algerian Republic, 2023).

From an infrastructural perspective, the state has successfully expanded financial access through the digitization of the postal network. According to the latest annual report by GIE Monétique (2025), the total number of interbank and postal cards (Edahabia and CIB) in circulation rose to 15.6 million cards by the end of 2024. This figure implies that a substantial portion of the adult population now possesses the primary tool for financial inclusion. However, possessing a card does not automatically translate into digital usage, as the infrastructure must be supported by active acceptance points. In this regard, the report notes that the number of Electronic Payment Terminals (TPE) remains relatively low compared to the number of cards, posing a bottleneck for merchant payments (GIE Monétique, 2025).

Regarding consumer behavior and the adoption of digital payments, the data indicates a strong shift towards mobile channels, driven largely by the convenience of remote transactions. The GIE Monétique (2025) data reveals those mobile payments specifically Person-to-Person (P2P) transfers witnessed exponential growth, doubling from the previous year to reach a transaction volume of 503 billion DZD in 2024. Furthermore, internet-based payments for

services and utilities increased by 61%, reflecting a growing trust in digital platforms among Algerian consumers. These statistics suggest that when FinTech solutions offer immediate utility and ease of use (such as instant transfers via the BaridMob app), adoption rates accelerate rapidly (GIE Monétique, 2025).

Despite these positive indicators, a critical analysis of the payment ecosystem reveals a persistent "Cash Paradox." While digital access has improved, cash remains the dominant instrument for daily transactions. The starkest evidence of this is the volume of ATM withdrawals, which exceeded 3.6 trillion DZD in 2024, a figure that vastly overshadows the volume of electronic merchant payments (GIE Monétique, 2025). This discrepancy highlights that for most users, FinTech is currently utilized primarily as a mechanism to access cash (Cash-out) rather than to circulate digital money. Consequently, the challenge for achieving sustainable economic growth in Algeria has shifted from providing "access" (which has been largely achieved via widespread card issuance) to promoting "usage" by incentivizing digital merchant payments and reducing the reliance on the informal cash economy.

6. Conclusion and Recommendations

This study has investigated the transformative potential of Financial Technology (FinTech) as a strategic driver for financial inclusion and sustainable economic growth. The theoretical analysis confirms that FinTech possesses the capacity to dismantle traditional barriers—such as high transaction costs and geographic limitations—thereby democratizing access to financial services. However, the empirical overview of the Algerian context reveals a critical dichotomy: while significant progress has been made in infrastructure and "financial access" (evidenced by the issuance of 15.6 million cards and the enactment of Law 23-09), "financial usage" remains constrained by a persistent reliance on cash.

The findings indicate that technological availability alone is insufficient to achieve sustainable growth. The dominance of cash withdrawals over digital payments suggests that FinTech is currently serving as a bridge to liquidity rather than a tool for digital economic circulation. Consequently, the transition from mere accessibility to active, value-generating inclusion requires a multi-dimensional approach that addresses regulatory, behavioral, and structural challenges.

Recommendations

Based on the synthesis of theoretical findings and the empirical overview of the Algerian case, the study proposes the following strategic recommendations to leverage FinTech for sustainable economic growth:

1. Bridging the Access–Usage Gap: Policies should prioritize the effective use of digital payments rather than mere access. Fiscal incentives can encourage digital transactions and reduce cash dependency.
2. Enhancing Digital Payment Infrastructure: Expanding low-cost solutions such as QR codes and Soft-POS can accelerate merchant adoption and integrate informal businesses into the formal economy.
3. Strengthening Digital Trust and Literacy: Behavioral resistance to e-payments requires targeted awareness programs. These initiatives should emphasize security, reliability, and the economic benefits of digital finance.

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