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THE IMPACT OF FINANCIAL TECHNOLOGIES (FINTECH) ON THE DEVELOPMENT OF ISLAMIC BANKING INSTRUMENTS IN ALGERIA: AN ANALYTICAL STUDY IN LIGHT OF BANKING DIGITAL TRANSFORMATION

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ABSTRACT

This article deals with an analysis about the impact of Financial Technologies (FinTech) in the development of Islamic banking instruments in Algeria, starting from establishing the theoretical concepts and the methodological challenges, and reaching to an evaluation of the reality of the local application and observing the digital transformations inside the Islamic banking sector. Also, the research reviews some models of international integration between financial technology and Islamic products, and it clarifies the most important legislative and technical obstacles that stand against integrating the digital solutions inside the Algerian banks. The article tries to show the effect of FinTech in improving the financing and the management of the Islamic investment and saving products, with looking forward the horizons of future innovation and the expansion of financial inclusion.

KEYWORDS

Financial Technologies, Islamic Banking, Digital Transformation, Financial Inclusion

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Introduction:

The topic of the impact of financial technologies in developing the instruments of Islamic banking in Algeria is connected with a changing reality that imposes itself strongly on the banking and economic scene, where it became usual that we hear about digital banking platforms and modern financial applications that are entering slowly into the details of our daily life. The bank is no more just a building that people visit to finish their transactions, but it turned into a digital experience available at any moment on the smart phones. And between this technological rush, an important question puts itself in the Muslim societies and especially in Algeria, which is: how can the modern financial innovations be in agreement with the requirements of Islamic banking and serve its objectives without breaking its fixed Sharia principles?

Islamic banking is not strange from the idea of renewal, because from its beginning it was seeking to present alternatives that are compatible with Sharia for every service that the conventional banking system invents. And today it finds itself in another confrontation with the new financial technologies like FinTech, this world which is full of non-traditional ideas and tools that promise speed and accuracy and inclusivity. The adaptation is not easy, because there are challenges related to how to frame these technologies according to the jurisprudential rules, but on the other side the available opportunities look promising for the Islamic sector in Algeria; as the technology can open new doors to reach categories that were far from the banking system, and contribute in modernizing the processes of financing and investment in a more efficient and transparent way.

And the experience of Algeria with Islamic banking in reality is relatively new if we compare it with the countries that preceded it in this field. But in the recent years there was an increasing popular and

institutional interest in it, and with the increasing pressures toward digitalization, the Islamic banks started to think seriously in developing digital platforms and automating their services, until the Islamic banking experience became not very different in benefiting from the applications or the cards or the services from its traditional counterpart. However, the question remains about the degree of the ability of these transformations to satisfy the real needs of the public, and if FinTech can provide innovative solutions without crossing the Sharia boundaries.

From another side, FinTech imposes a different pattern in thinking, where the issue is not only about modifying the shape of the service, but about how to understand the logic of the technology itself, and how can blockchain regulate the contracts of partnership and mudaraba, and how can artificial intelligence contribute in distributing the financings within the limits of a Murabaha that is agreed upon? These kinds of questions became raised daily in front of the managers of the Algerian Islamic banks, and with every step toward digitalization it is necessary to review the legislations and the regulations and propose new ijтиhad from the Islamic banking jurisprudence in order to guarantee the safety of the experience and avoid the forbidden matters.

And maybe what makes this topic more exciting for discussion is the hope that FinTech may contribute in fixing some chronic problems of the Algerian financial system. Modern technologies do not only provide speed or comfort, but they can strengthen transparency, and reduce administrative corruption, and widen the circle of financial inclusion so that banking services reach rural areas or categories not used to visiting banks, and offer them Islamic financial products that match their convictions. This digital transformation then is not just a technological luxury, but it touches the depth of economic development and also social justice.

So the main problem is not only the integration of technology in Islamic banks, but the ability of these institutions to understand the culture of digital transformation in a way that protects their particularity and achieves their developmental objective. And this is what makes us ask the following main question:

Can modern financial technologies be a lever for developing Islamic banking, or do they have challenges that may obstruct the path?

To answer the raised problem, the descriptive analytical method will be the most suitable path, because it allows to observe the real transformations in the Algerian market, and exposes the experiences of success and failure, and uses similar international experiences that can be a rich material for ijтиhad and benefit. And between all these details, the human will remain the center of the service and the compass that decides in the end the success of any digital banking transformation in Islamic banks in Algeria.

The First Topic: The Conceptual and Methodological Framework of Financial Technologies and Islamic Banking

The modern financial technologies are considered among the most important manifestations of change in the banking environment, where they imposed themselves as a main factor in developing the financial operations and in updating the system of banking services, and in the opposite side the understanding of the theoretical principles of Islamic banking and its development is a necessity that allows linking the technological transformation with the Sharia rules that govern this sector, which makes the research in this field an actual foundation for any analysis that aims to evaluate the effect of FinTech on the Islamic financial sector.

The First Requirement: The Conceptual Framework of Financial Technologies (FinTech) and Islamic Banking

The understanding of the conceptual framework for both financial technologies (FinTech) and Islamic banking is a core step to determine the nature of the relation between the modern financial technology and the banking system based on Sharia values, because clarifying the basic concepts helps in building a coherent theoretical background that allows analyzing the applied reality with objectivity and accuracy, since the conceptual side represents the base on which the analytical visions in the later topics are built, especially that both concepts – FinTech and Islamic banking – are connected to intersected knowledge fields combining economy, finance, Sharia, and technology (Aouiti, 2021, p.17).

The First Branch: The Definition of Financial Technologies (FinTech), Its Emergence, Development, and Its Fields of Use

The financial technologies FinTech refer to every use of the digital technology with the aim of improving or innovating the financial and banking services in a way that increases efficiency and reduces the costs and increases the inclusiveness of transactions (Mougaray, 2016, p.38). And it is also defined as a system of digital tools that employ artificial intelligence and block-chains and electronic payment methods to provide financial services alternative to the traditional banks through the internet or the smart mediums Abdel A'al (2019, p.92). And others present a more comprehensive definition when he sees that FinTech represents a technological evolution that aims to re-formulate the relation between the financial institutions and the customers through innovative systems that achieve easiness and safety in performing the financial activities El-Saghir (2020, p.66). While some focus on the strategic side in its definition, as he considers that FinTech is a revolution in the models of financial work, integrating technology in the core of the banking services instead of remaining only a supportive tool. Harrath (2022, p.104).

The concept of financial technologies appeared for the first time in a more crystallized way in the early nineties with the transformation toward digital transactions, but it gained a bigger momentum after the global financial crisis of the year 2008 when the traditional banks lost part of the customers' trust, and the emerging companies that present digital financial solutions emerged as effective alternatives (Arner, Barberis & Buckley, 2017, p.375). And since that time, the scope of FinTech expanded to include many fields like banking technology, crowdfunding, digital currencies, electronic insurance, and investment based on big data. And in the stage after 2015 FinTech became a part of the governmental digital transformation strategies in many countries, including the Arab countries that launched initiatives to regulate this field (Haddouch, 2021, p.59).

And the most important fields of using the financial technologies are the digital banking services which include opening accounts and making transfers and real-time monitoring of accounts through smart applications, in addition to electronic payment systems and digital wallets that make purchasing operations easier without physical cash. And its fields also include crowdfunding platforms that allow investors to finance small and medium projects in innovative ways, and the online credit systems that depend on analyzing big data to estimate risks with accuracy (Jaddah, 2020, p.141). And FinTech also extends to the insurance sector (InsurTech) through automation and predictive analysis, and to digital investment using algorithms (Robo-Advisory) that presents customized financial recommendations for the users (Lee & Shin, 2018, p.47). All these applications confirm that the financial technologies are no more only a tool but transformed into an integrated economic system affecting the patterns of financial production and consumption at the same time.

And Algerian researchers also point that the entrance of FinTech to the local market is still limited, but the first experiences in electronic payment and mobile banking services launched by public and private banks are considered a beginning for forming a promising digital banking environment (Boulkhrouf, 2021, p.118). This path reflects the beginning of a real awareness among the financial actors in Algeria about the importance of technology in renewing the banking system and involving new categories in the official financial cycle.

The Second Branch: The Nature of Islamic Banking, Its Characteristics, and Its Economic and Sharia Objectives

Islamic banking is defined as a banking system based on the principles of Sharia which prohibit dealing with usury, gambling, and forbidden speculation, and seeks to achieve justice in financial exchange through participatory financing forms based on profit and loss sharing (Al-Qazzaz, 2018, p.202). It is described also as financial institutions operating within an economic system aiming to secure the needs of individuals and institutions in a way consistent with the Islamic values of justice and solidarity (Al-Wanas, 2019, p.85). Islamic banking is a practical application of Islamic economic principles through financial institutions that transform resources into legitimate investments contributing to comprehensive development (Abdel-Malek Khalifa, 2020, p.131). The essence of Islamic banking is not limited to the prohibition of interest, but extends to a humanistic vision linking money to productive activity and achieving social balance (Al-Taher, 2022, p.51).

Islamic banking emerged in the 1970s with the establishment of the first Islamic bank in Egypt in 1975, and then rapidly expanded in the Islamic world and beyond, especially after financial crises that revived discussions on ethics in finance (Iqbal & Molyneux, 2016, p.11). Its instruments evolved from simple forms like Murabaha, Musharaka, and Ijara to more complex products like Islamic Sukuk and microfinance, which enabled it to compete with conventional banking systems in many markets (Al-Khalifi, 2021, p.98). In Algeria, Islamic banking appeared practically from the early 2000s, and with recent legislations supporting Islamic windows in public banks, its presence gradually strengthened within the banking system (Moumen, 2023, p.73).

Islamic banking is characterized by a set of features that make it different from conventional banking, foremost among them its connection to the real economy through financing productive projects, reliance on Sharia-compliant contracts instead of fixed interest, consideration of risk-sharing, and achieving social objectives alongside profitability (Husseini, 2020, p.209). It is also characterized by transparency and accountability through the presence of Sharia supervisory boards ensuring compliance with jurisprudential rules, giving it credibility in economic environments seeking more stable and just financial alternatives (Al-Omar & Abdel-Haq, 2019, p.122).

Economically, the main goal of Islamic banking is to achieve balanced development through investing funds in productive sectors generating benefits for society as a whole, not in speculation or illegal activities. This is based on the objectives of Sharia which call for developing money through legitimate means, avoiding hoarding, and enhancing social solidarity (Youssef, 2018, p.64). From a Sharia perspective, Islamic banking seeks to embody principles of justice, benevolence, and constructive activity through financial tools compatible with Islamic jurisprudence, making the financial process a means to achieve a broader human goal related to economic stability and social justice (Ateeq, 2022, p.135).

Both financial technologies and Islamic banking converge in the goal of renewing financial services and making them more efficient and just, the first through technological innovation and the second through value-based commitment. The importance of combining them lies in thinking in an integrative approach that seeks to utilize modern FinTech capabilities in a way that serves the Sharia and economic objectives of Islamic finance (Qadri, 2024, p.52).

The Second Requirement: The Methodological Framework of the Relationship between Financial Technologies and Islamic Banking

Addressing the methodological framework of the relationship between financial technologies and Islamic banking comes as a response to the increasingly overlapping nature of technology and ethical finance at the global level, where linking financial innovation with Sharia values has become a central issue in modern economic and banking studies. The methodological framework is not limited to formulating theoretical models of integration but also includes studying the practical dimensions and regulatory and Sharia obstacles accompanying the process of integrating FinTech into Islamic financial institutions, especially in light of the accelerating pace of digital transformation and the challenges it imposes in regulating banking operations within Sharia rules (Arner et al., 2017, p.373; Boulkhrouf, 2021, p.120).

The First Branch: Models of Integration and Interaction between FinTech and Islamic Banking at the Global Level

In recent years, innovative models have emerged that combine FinTech technologies with Islamic financing methods, as financial institutions began institutionalizing digital banking services while adhering to Sharia principles. For example, in Malaysia, the UAE, and Saudi Arabia, there are Islamic banks that developed electronic platforms relying on technology to provide Murabaha, Musharaka, and Ijara operations through smart applications allowing customers to open accounts and submit financing requests without visiting traditional branches (Lee & Shin, 2018, pp.42-47). Among the pioneering models are also the Islamic crowdfunding platforms, which rely on web technology to collect and distribute funds to projects under contracts compatible with profit-and-loss sharing agreements, achieving transparency and speed while observing Sharia rules (Al-Khalifi, 2021, p.100). Islamic insurance companies also apply InsurTech techniques to digitize Takaful contracts, enabling real-time monitoring of operations and immediate compensation based on smart algorithms supervised by independent Sharia supervisory boards (Al-Omar & Abdel-Haq, 2019, p.124).

Projects have also emerged offering Sharia-compliant cryptocurrencies in the digital currency domain, based on real assets and observing Sharia transfer conditions, despite ongoing jurisprudential debates about their permissibility (Mougaray, 2016, p.171). Some countries have also adopted blockchain solutions to document Islamic contracts and ensure the application of profit-and-loss or Ijara conditions in a way that preserves the rights of the parties and prevents fraud, which enhanced investors' confidence in these products (Haddouch, 2021, p.61). Many Islamic financial institutions are currently moving toward applying artificial intelligence in loan analysis and financing selection, so that efficiency requirements are met without violating Sharia rules, contributing to financial inclusion and improving service quality in digitally active Islamic markets (Jaddah, 2020, p.146; Lee & Shin, 2018, p.50).

The Second Branch: Methodological Challenges and Sharia Controls for Employing FinTech in the Islamic Banking System

The process of employing FinTech in Islamic banks faces a number of methodological challenges, foremost among them is the issue of regulating digital operations according to Sharia rulings that require

precise mechanisms to verify the validity of contracts and transactions. In many cases, jurists find it difficult to keep pace with the rapid development of financial technology, which necessitates encouraging Islamic banks to invest in specialized Sharia supervisory bodies that interact with tech companies to review digital solutions before their approval (Atiq, 2022, p.136). Among the most important challenges is also the existence of certain technological practices that may allow hidden forms of speculation or interest, requiring auditing of the software and digital documentation systems used. For example, the issue of cryptocurrencies arises, oscillating between jurisprudential rejection and acceptance depending on the project's ability to meet guarantees, transparency, and the linking of the currency to real economic activity (Yousef, 2018, p.67). The matter becomes even more complex with artificial intelligence applications involved in financing decisions, where software must be based on criteria ensuring justice in resource distribution and respect the principle of risk-sharing without discrimination or bias (Al-Khalifi, 2021, p.105).

From a regulatory perspective, challenges lie in the absence of clear legislative frameworks in many Islamic countries regarding the digitalization of banking services and their Sharia requirements, which drives some banks to limit themselves to partial digital services that do not achieve the desired integration between FinTech and Islamic banking (Boulkhrrouf, 2021, p.121; Abdel A'al, 2019, p.98). The diversity of international models enriches the experience, but at the same time imposes the necessity of directing benefits according to the specificity of each market, regardless of the speed of technological development.

Practical specialists recommend adopting methodologies that combine innovative jurisprudential research with digital development, and encouraging partnerships between Islamic banks and FinTech startups, so that innovation occurs within strict supervisory mechanisms, and digital products are granted periodic Sharia certificates before being launched in the markets (Al-Omar & Abdel-Haq, 2019, p.130; Haddouch, 2021, p.63).

Evolution of Islamic Deposits and Financings in Algeria between 2020 and 2024 (billion DZD)

| Year | Number of Banks Offering Islamic Products | Total Islamic Deposits | Granted Financings | Number of Islamic Branches and Windows |
|---------------------|---|------------------------|--------------------|--|
| 2020 | 5 | 150 | 90 | 220 |
| 2022 | 10 | 546 | 320 | 560 |
| 2024 | 12 | 794 | 493 | 858 |
| 2025 (March) | 12 | 817 | 505 | 861 |

Source: Algerian Ministry of Finance, 2024; Banque Nationale d'Algérie, 2025.

The Second Topic: The Impact of Financial Technologies on the Development of Islamic Banking Instruments in Algeria

The use of financial technologies in developing Islamic banking instruments has become one of the main axes for modernizing the banking sector in Algeria, as digital orientations have imposed new challenges and opportunities on Islamic banks, whether in terms of improving services or diversifying financial products. Studying the actual impact of these technologies takes on particular importance in light of Algeria's endeavor to keep pace with global financial development and respond to the needs of the local financial community, in a way that achieves integration between technical innovation and Sharia regulations (Moumen, 2023, p. 71).

The First Requirement: The Reality of Applying Financial Technologies in the Algerian Banking Sector

The reality of applying financial technologies in the Algerian banking sector represents a reflection of the reform and modernization efforts adopted by the state to raise the level of financial services and keep pace with global technological revolutions, as digital transformation in Algerian banks has become a strategic option and not merely a trend limited to private institutions. Noticeable developments have also emerged in the extent to which the Algerian banking system absorbs the possibilities offered by FinTech, whether at the level of the regulatory framework or regarding the stimulation of the electronic infrastructure (Ben Djabellah, 2022, p. 28).

First Branch: The Path of Digital Transformation in Algerian Banks and the Legislative Framework Regulating It

Algerian banks have witnessed during the last two decades gradual transformations directed towards modernizing their technical structure and developing the system of digital services, starting with the introduction of ATMs and the development of internal electronic networks, and reaching the launch of online banking services and smartphone applications. These efforts accelerated noticeably since 2016 with the issuance of instructions by the Central Bank requiring the digitization of banking transactions and the integration of electronic payment concepts, where banks were obliged to provide online payment gateways and electronic wallets, which formed a starting point towards generalizing digital products in the Algerian banking market (Ayyat, 2021, p. 93; Chadi, 2021, p. 52). Digital transformation has also been based on developing the legislative infrastructure to regulate digital financial activity; the Algerian monetary authorities issued new laws on combating cybercrimes, strict regulation of payment instruments, and updating the legal framework of non-cash transactions, especially through the Money and Credit Law of 2003, later amended, which established the concept of digitized financial transactions and defined the conditions for granting licenses to electronic payment institutions (Amin, 2019, p. 88). Algeria's accession to the Financial Transparency Organization and various international supervisory bodies has also contributed to pushing banks to adopt information security standards and protect customers' digital data (Boumediene, 2020, p. 106).

Indicators of Digital Transformation in the Algerian Banking Sector up to 2024

| Indicator | Value / Rate |
|---|---|
| Number of internet users | 33.49 million users |
| Internet penetration rate | 72.9% of the population |
| Number of smartphone users | 50.6 million |
| Volume of electronic payment transactions | 4.5 million operations with a value of 36 billion DZD |
| Bank account penetration | 44% of adults |

Source: Bank of Algeria Annual Report 2024; DZairTIC Portal 2024.

Despite this progress, there are still structural challenges that hinder a full transition to digitization, such as the weak spread of electronic payment systems outside major cities, the low culture of digital dealings among a considerable segment of customers, as well as some obstacles related to telecommunications infrastructure and the high cost of technological investment (Lotfi, 2020, p. 77). However, the achievements made in terms of the number of digital operations and the growth of electronic wallets indicate the possibility of overcoming these obstacles gradually with the development of legislation and the increasing competitiveness of the banking market (Chadi, 2021, p. 54; Chaib, 2023, p. 39).

At the level of strategic initiatives, some public banks have taken the lead in establishing unified platforms for processing payments between financial institutions, and launched partnerships with telecommunications companies to allow instant transfers via mobile phone. The sector has also witnessed the entry of foreign and Arab banks that invested in digital infrastructure and pushed toward enhancing operational efficiency by automating most internal operations (Ben Malek, 2022, p. 114). This was accompanied by awareness campaigns to encourage bank customers to use electronic payment tools and reduce traditional transactions, especially with the recent global health conditions that imposed social distancing (Ben Djabellah, 2022, p. 30).

Second Branch: The Level of Integrating FinTech into Algerian Islamic Banking Activities (Services, Applications, Infrastructure)

The experience of Islamic banking in Algeria comes in a special context, as it is a relatively new sector compared to its counterparts in some other Arab and Islamic countries. However, the urgent need of the market and the growing awareness of the importance of Sharia-compliant products pushed banks to think seriously about investing FinTech mechanisms within their services. Since 2020, the Islamic branches of public and private banks in Algeria have begun launching packages of digital services that include remote account opening, issuing Islamic bank cards, and providing instant payment operations compatible with Sharia standards (Zerrouki, 2022, p. 158; Amari, 2023, p. 101).

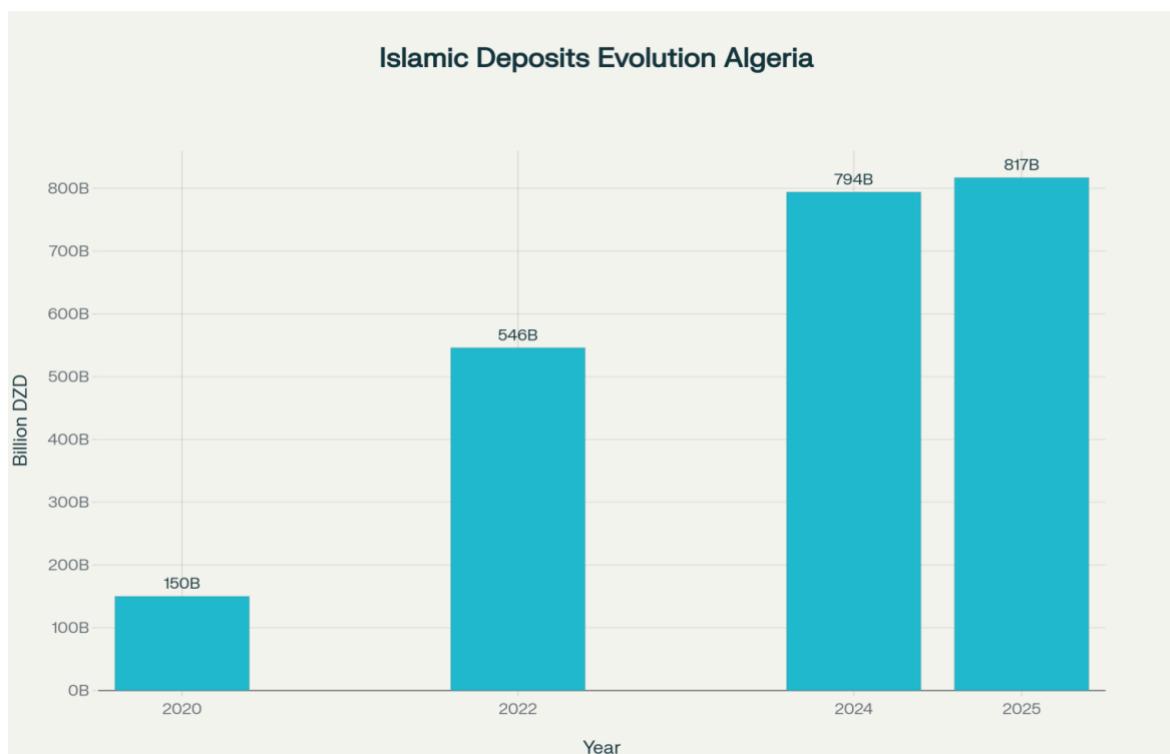
The most important step in this path lies in the efforts to develop mobile phone applications and online banking service platforms that allow the client to track his balances, pay bills electronically, and transfer money

between Islamic accounts at any time with a high degree of security (Boughrara, 2023, p. 61). The first experience of electronic payment wallets compatible with murabaha and musharakah contracts has also been launched, which reflects a qualitative progress in integrating FinTech within Islamic products (Bouherar & Meddour, 2024, p. 79). It is worth noting that building the digital infrastructure of Islamic banking relied on partnership with local and international technology companies specialized in developing Sharia-compliant solutions, as these partnerships provided advanced capabilities for digital verification of contracts and documents and for managing banking operations in an intelligent way, with Sharia supervision capabilities embedded programmatically (Al-Arabi, 2024, p. 27). Despite this progress, the manifestations of employing artificial intelligence and blockchain within Algerian Islamic banking work are still in their beginnings, and this is mainly due to the complexity of jurisprudential requirements and the absence of detailed legislations that keep pace with FinTech developments, as is the case in other Islamic markets (Kharroubi & El Mansouri, 2021, p. 201).

Several reports also indicate that most FinTech innovations applied in Algerian Islamic banking are currently focused on improving the digital infrastructure and facilitating customer transactions, without yet moving to the levels of Islamic crowdfunding or Sharia-compliant robo-advisors (Boughrara, 2023, p. 63). Nevertheless, the growth in the share of Islamic digital transactions remains a positive indicator of the public's acceptance of this type of services, especially among youth and entrepreneurs (Zerrouki, 2022, p. 160).

It should also be noted that the continued integration of FinTech technologies requires not only updating bank devices and developing applications, but also training and qualifying Sharia and technical human resources, so that it becomes possible to monitor digital products and constantly review the extent of their compliance with jurisprudential regulations (Al-Arabi, 2024, p. 29; Zerrouki, 2022, p. 161). This will also be supported by developing the national legislative framework toward more flexibility, which some regulatory bodies have begun to address by issuing specific instructions on the digitization of Islamic products and working in parallel with Sharia supervisory boards in the context of financial innovation.

The Evolution of Total Islamic Deposits in Algeria (2020–2025)



Source: Bank of Algeria. (2024). Annual Report 2023. Algiers: Bank of Algeria.

The Second Requirement: Analysis and Evaluation of the Impact of FinTech on the Development of Islamic Banking in Algeria

The analysis and evaluation of the impact of financial technologies FinTech on the development of Islamic banking in Algeria represent a pivotal step to understand the current banking transformation path and to anticipate future innovation possibilities, since the integration of digital solutions has become a determining factor in enhancing the competitiveness of Islamic banks, not only at the level of services but also at the level of investment and savings products, which necessarily requires an objective evaluation of the achieved results and the challenges that remain (Khalifa, 2022, p.92).

The First Branch: The Impact of Financial Technologies on Developing Islamic Products and Tools (Finance, Investment, and Savings)

The entry of financial technologies has contributed to changing the structure of Islamic banking products and their delivery methods in the Algerian market noticeably during recent years, as the reliance on digital solutions has expanded the service base and developed innovative tools that meet different needs of customers operating according to Sharia (Bougrara, 2023, p.61; Bouherar & Meddour, 2024, p.83). In the field of finance, technology enabled facilitating the study of clients' files through smart electronic platforms that depend on automatic and effective data registration, and accelerated decision-making processes in granting facilities, especially in Murabaha and Ijara contracts, with the possibility of real-time monitoring of payments and settlements. FinTech also helped increase the transparency degree in implementing Islamic finance contracts, as digital procedures now allow documenting every step and ensuring its submission to Sharia supervision without continuous human intervention, which reduced error rates and possibilities of manipulation in contracts. This is particularly important in Islamic microfinance products that became electronically directed to new client segments, especially young people and small business entrepreneurs (Zerouki, 2022, p.158).

Digital transformations have prepared a suitable environment for innovating new tools compatible with Islamic investment rules, such as launching digital investment portfolios that consider lawful asset diversification and support investment decision-making based on big data and smart analysis (Abdelkader, 2022, p.77). Some banks also began developing mechanisms for joint investment relying on digital platforms, where projects are financed by funds from a group of shareholders within a legal and Sharia framework that ensures trust and provides greater opportunities for achieving local economic development. Furthermore, Islamic digital banking services have promoted a culture of regular saving through innovative products such as smart savings accounts compatible with participation or Sharia-compliant Mudaraba contracts, which are electronically controlled and offer transparent and motivating returns for clients compared to what was available in the traditional framework (Al-Arabi, 2024, p.25).

It is important to note that the impact of FinTech was not limited only to product development but also included improving the customer experience by reducing time and procedures in opening accounts, obtaining financing, and benefiting from digital financial guidance, while providing financial services to individuals outside the traditional banking system, which contributed to increasing financial inclusion levels (Boumediene, 2020, p.113). Despite this development, the field remains wide for enhancing innovation in Islamic banking in Algeria, especially with the limited spread of solutions such as Islamic crowdfunding or Sharia-compliant digital currencies.

The Second Requirement: Analysis and Evaluation of the Impact of FinTech on the Development of Islamic Banking in Algeria

Analyzing and evaluating the impact of financial technologies (FinTech) on the development of Islamic banking in Algeria represents a pivotal step for understanding the current course of banking transformation and anticipating future innovation possibilities. Integrating digital solutions has become a decisive factor in strengthening the competitiveness of Islamic banks, not only at the level of services but also at the level of investment and savings products, which necessarily requires an objective assessment of the achieved results and of the challenges that still remain (Khalifa, 2022, p. 92).

First Branch: The Impact of Financial Technologies on the Development of Islamic Products and Instruments (Financing, Investment, and Savings)

The entry of financial technologies has contributed to changing the structure of Islamic banking products and the ways they are offered in the Algerian market in a tangible way during recent years, as reliance on digital solutions has led to expanding the range of services and developing innovative tools that meet different needs of Sharia-compliant customers (Boughrara, 2023, p. 61; Bouherar & Meddour, 2024, p. 83). Technology in the field of financing has enabled the facilitation of the study of clients' files through smart electronic platforms that rely on automatic and efficient data recording, and it has accelerated decision-making processes in granting facilities, especially in murabaha and ijara formulas, with the possibility of real-time follow-up of payment and settlement. FinTech has also helped to raise the degree of transparency in the implementation of Islamic financing contracts, as digital procedures now allow documenting all steps and ensuring their submission to Sharia supervision without the need for continuous human intervention, which has reduced error rates and the possibilities of manipulation in contracts. The importance of this appears in particular in Islamic micro-finance products that have become directed electronically to new segments of clients, especially youth and small entrepreneurs (Zerrouki, 2022, p. 158).

Digital transformations have led to the innovation of new tools that fit the rules of Islamic investment, such as the launch of digital investment portfolios that observe the legitimate diversification of assets and support investment decision-making based on big data and smart analysis (Abdelkader, 2022, p. 77). Some banks have begun developing joint investment mechanisms relying on digital platforms, whereby projects are financed with funds from a group of contributors within a legal and Sharia framework that builds trust and provides greater opportunities for achieving local economic development. Islamic digital banking services have also helped to strengthen the culture of regular savings through innovative products such as smart savings accounts compatible with partnership or mudarabah rules, which are managed electronically and provide transparent and motivating returns for clients compared to what was available in the traditional framework (Al-Arabi, 2024, p. 25). It is important to point out that the impact of FinTech has not been limited only to product development, but has also included improving the customer experience by reducing time and procedures in opening accounts, obtaining financing, and benefiting from digital financial guidance, while offering financial services to individuals outside the traditional banking system, which has contributed to raising the level of financial inclusion (Boumediene, 2020, p. 113). Despite this progress, there is still wide room to strengthen innovation in Islamic banking in Algeria, especially given the limited spread of solutions such as Islamic crowdfunding or Sharia-compliant digital currencies.

Second Branch: Challenges and Future Prospects of Adopting FinTech in Algerian Islamic Banks

Despite the clearly positive results in the path of digital transformation, the process of adopting FinTech in Algerian Islamic banks still collides with a set of regulatory, technical, and Sharia challenges. Controlling technological solutions within Sharia frameworks is among the most prominent difficulties, which obliges public and private banks to allocate expert teams that combine digital and jurisprudential knowledge (Kharroubi & El Mansouri, 2021, p. 205). It is not sufficient to simply import global applications; rather, every new financial product must be aligned with the requirements of local Sharia boards.

Weak internet coverage in some regions and the lack of homogeneity between the electronic systems of banks and payment institutions emerge as technical obstacles that hinder the application of modern technologies, affecting the speed of procedures and the effectiveness of using digital wallets and secure information exchange (Chaib, 2023, p. 41). The limited availability of qualified human resources in both technical and Sharia fields leads to slowness in developing Islamic digital products and increases the need for continuous training of competencies (Amari, 2023, p. 105).

Although there is a clear will on the part of the banking authorities in Algeria, some legislative and regulatory provisions are still not sufficiently clear, especially with regard to supervision of digital products and clients' rights in new dealings such as smart contracts and personal data protection. The absence of a comprehensive system for Islamic crowdfunding or digital sukuk also limits the attraction of large investments and makes banks hesitant to launch innovative Sharia-compliant financial products (Al-Arabi, 2024, p. 27).

Nevertheless, development prospects remain promising in light of the growing societal demand for digital Islamic banking services and the increasing awareness of institutions of the importance of cooperation with local and international financial technology companies to develop integrated Sharia-compliant solutions. Added to this is the gradual improvement in financial legislation and the support of governmental initiatives for the digitization of the Islamic banking sector and for financing research and digital Sharia expertise efforts

(Ben Malek, 2022, p. 121). Specialists agree that the future of FinTech in Algerian Islamic banking is linked to the ability of actors to overcome these difficulties through adopting partnership and integration strategies between banking institutions, technology companies, and entrepreneurs, with the need to expand investment in digital infrastructure, consolidate digital governance and transparency, and activate continuous jurisprudential supervision (Bouherar & Meddour, 2024, p. 88; Ben Djabellah, 2022, p. 33). The essential requirement remains to ensure that renewed digital products keep pace with clients' needs and their aspirations for financial innovation aligned with the objectives of Sharia, so that Islamic banking becomes more dynamic and closer to the reality of the globalized digital economy.

Conclusions

The study showed that the relation between financial technologies (FinTech) and Islamic banking in Algeria represents a vital step toward building a banking system more efficient, flexible, and responsive to the global technological transformations. The results indicated that the integration of digital solutions contributed to expanding the base of Islamic financial services, simplifying procedures, and improving transparency, which made technology an effective tool for developing financing, investment, and saving instruments compliant with Sharia, in addition to enhancing financial inclusion and increasing customers' trust in Islamic banking institutions.

It also appears that this development is not without major challenges related to the technical infrastructure, banking legislations, and the level of qualification of competencies able to reconcile technology with Sharia rulings. The success of the Algerian experience in this field remains conditional on updating the legal framework and ensuring continuous and specialized Sharia supervision, along with the necessity to support partnerships between Islamic banks and emerging FinTech companies, so that innovation becomes an established institutional culture instead of remaining a limited experimental project.

Moreover, the analysis showed that continuing the digital banking transformation in Algeria requires a long-term strategic vision that starts from the specificity of the local Islamic financial environment and benefits from successful comparative experiences in the Islamic world, provided that the process remains disciplined by the core values of Sharia in justice, transparency, and social responsibility. There is no doubt that investing the digital transformation in developing Islamic banking forms an opportunity to consolidate Algeria's position in the modern Islamic finance system and activate this sector's contribution to financing national economic development.

Accordingly, the future of Islamic banking in Algeria is linked to its ability to absorb financial technologies within a purpose-based approach that combines innovation and reform, so that technology becomes a means to serve the Sharia and economic vision, not a substitute for it, and thereby FinTech transforms from a mere digital tool into an actual partner in building a contemporary Islamic financial system based on efficiency, justice, and sustainability.

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