Journal of Economics and Human Development, Volume No., 17 Issue 1 and Page 349-364

Challenges of Digital Banks' Adoption of FinTech in Emerging Economies
- case of Saudi Arabia-
تحديات تبني البنوك الرقمية للتكنولوجيا المالية في الاقتصادات الناشئة
– حالة المملكة العربية السعودية –

1/ LADHEM Cherif Abdeldjaber Assil [1,*], University of Blida 2, (Algeria), Laboratory for Economic and Human Development in Algeria.
ca.ladhem@univ-blida2.dz, ORCID https://orcid.org/0009-0009-0386-8730
2/ KHERROUBI Sofiane, University of Blida 2, (Algeria), Laboratory for Economic and Human Development in Algeria.
s.kherroubi@univ-blida2.dz, ORCID https://orcid.org/0000-0002-0548-3035

Received: 28/12/2025; **Accepted:** 21/05/2026

Abstract : This study looks at the difficulties that digital banks in developing countries face when adopting fintech, with a focus on Saudi Arabia. These banks run into problems like strict rules, not enough digital tools, and competition from older banks, Saudi Arabia's situation shows how important it is to make big changes in strategy to bring Fintech into digital banks, which fits with the country's vision 2030 plan, Saudi Arabia is ranked 65th worldwide in Fintech use and has made progress in making banking services more accessible to more people.
Keywords: Fintech; Digital Banks; Emerging Economies; Saudi Experience
Résumé : Cette étude vise à démontrer les défis que les banques numériques doivent surmonter dans les pays en développement pour tirer parti des innovations Fintech, Elle s'intéresse au cas de l'Arabie saoudite. En effet, ces banques en ligne doivent composer avec une réglementation stricte, un terreau digital peu fertile et la forte concurrence des banques traditionnelles, Le cas de l'Arabie saoudite illustre que des changements majeurs sont indispensables pour bien intégrer les FinTech dans les banques numériques, à l'instar de la vision 2030 du pays, L'Arabie saoudite occupe la 65e place du classement mondial de l'adoption des Fintech et a réussi à faciliter l'accès au système financier.
Mots-clés : Fintech ; Banques numériques ; Économies émergentes ; Expérience saoudienne.

* LADHEM Cherif Abdeldjaber Assil

الملخص:

تهدف هذه الدراسة إلى إبراز تحديات اعتماد التكنولوجيا المالية من قبل البنوك الرقمية في الاقتصادات الناشئة، مع التركيز على حالة المملكة العربية السعودية. حيث تواجه البنوك الرقمية في الاقتصاديات الناشئة قيود تنظيمية وضعف مستوى البنية التحتية الرقمية، وكذا منافسة البنوك التقليدية، وتبرز التجربة السعودية أهمية تجسيد اصلاحات استراتيجية متكاملة لدمج التكنولوجيا المالية بشكل فعال في البنوك الرقمية، وفق رؤية المملكة لسنة 2030، حيث احتلت السعودية المرتبة 65 عالميا في تبني التكنولوجيا المالية، وتمكنت تعزيز الشمول المالي.

الكلمات المفتاحية: التكنولوجيا المالية، البنوك الرقمية؛ الاقتصادات الناشئة؛ التجربة السعودية

Introduction

The financial world and the banking sector are changing faster, in the past the customers had to visit a bank branch, wait in line, and rely completely on staff to complete their transactions, This traditional model served people for many years, but it was slow and costly, and it left part of the population outside the financial system because of distance or low income.

As technology has developed, banking has gradually changed, like Computers and the internet have made the process of transactions more quickly, and banking services have appeared through machines and electronic portals, now many people manage their money through smartphones, which reflects the deep transformation that financial services have undergone worldwide.

Within this context, the idea of FinTech and digital banks has emerged, These models leverage advanced digital tools such as mobile applications, and distributed technologies in the complete online delivery of their financial services, so the digital banks allow customers to create accounts, transfer money, pay bills…etc, This new approach has made financial services faster.

These developments are particularly important for emerging economies, In many developing countries, traditional banking systems are either limited in their reach or low in their efficiency, leaving millions of people without bank accounts or savings and credit services, It is here that FinTech and digital banks have an opportunity to reduce this gap, given that they depend on mobile phones and the internet to reach individuals and remote areas and enable them to participate in the formal economy.

The Arab region belongs to the group of emerging economies and represents a typical case of these transformations, Countries in the Middle East and North Africa, including the KSA, are still in the process of building their financial and digital systems and seek to benefit from the potential of FinTech to expand financial inclusion, improve banking efficiency, while at the same time preserving financial stability and trust in the banking system.

Within this context, the KSA stands out as an emerging Arab economy seeking to modernize its financial sector within an ambitious national vision, the Kingdom of Saudi Arabia has launched programs for financial reform and digital transformation and has encouraged the emergence of digital banks and FinTech firms that offer payment, lending, and investment services through digital

platforms, in an effort to build a modern model of financial services that fits the characteristics of an emerging economy, So understanding the experience of digital banks in Saudi Arabia is particularly important, because what happens in this country can influence the path of financial transformation across the Arab region, KSA is a leading economy at the regional level, but at the same time it belongs to the category of emerging economies, where opportunities for progress intersect with the specific conditions of a transition phase from this starting point, based on the above we pose the following problematic:

How has the KSA managed to advance the shift toward digital banks and the adoption of FinTech while still being an emerging economy?

- This major research question has engendered several others, such as the following: What is financial technology and digital banking, and why are they important for developing countries?
- What are the main obstacles that stop digitally native banks from using financial technology in emerging markets, especially in the Arab region?
- What are the key aspects of the rules and government programs that have helped FinTech and digital banks grow in Saudi Arabia as part of Vision 2030?
- Have Saudi digital banks achieved high performance according to the global fintech index?

Research Objectives : This research is equipped with four objectives. The main one is to clarify the concepts of FinTech and digital banking and how they work in an emerging market. The second is to find out what the challenges are that limit the use of FinTech by digital banks. The third is to look at the laws and policies in place to regulate and support FinTech in Saudi Arabia. The Fourth one is to measure the Saudi FinTech ecosystem's success through leading indicators like market size, digital payments, digital lending, and financial inclusion.

Research Methodology : This research employs both descriptive and analytical methods. It is based on secondary data sourced from official reports and recent academic studies. The paper adopts a case, study approach, which takes Saudi Arabia as the primary instance of FinTech and digital banking development in an emerging economy.

In order to comprehend the different concepts and explore the study deeply by using a scientific approach, we thought it necessary to organize the material by these themes.

2-Concept and Importance of FinTech

2-1 Definitions of FinTech

There are several definitions of Fintech; among them are the following:

The World Bank says FinTech is “using digital technology in financial services,” and it explains that FinTech is changing how finance works by making financial services more inclusive and efficient, which helps the economy grow.(World Bank,2025).
The Financial Stability Board (FSB) says FinTech is “innovation in financial services that uses technology, which can lead to new ways of doing business, new tools, new processes, or new products. These changes can have a big impact on financial markets, banks, and how financial services are offered.” (Financial Stability Board,2024).

Financial technology, also spelled as fintech or Fin-tech, is a new term that mixes "financial" and "technology." It refers to the use of internet-based technologies in the traditional banking industry. Fintech platforms help with everyday tasks like depositing checks, transferring money between accounts, paying bills, and applying for financial aid .(Naifar & Elsayed,2023, p357)

Moreover, these innovations in financial services use technology to create new ways of doing business, new tools, new processes, or new products that have a big effect on financial markets and institutions.(Noureddine & Messemeche, 2024, p1461).
Tech companies that are providing financial services in new ways are being considered by Schueffe, referring to FinTech as a new term for improving financial inclusion. These companies offer innovative approaches to financial offerings such as crowdfunding websites, online tools for managing investments, and mobile payment systems. (Bouchelit & Benouziane, 2023, p102).

2-2 Historical evolution of fintech

FinTech has gone through three phases, as demonstrated below :

–**Phase I FinTech 1.0 (1886-1967):** This phase dealt largely with the initial infrastructure that enabled the transfer of financial data from one nation to another. In 1866, the first transatlantic telegraph cable was established, and in 1918, Fedwire, which is the first electronic money transfer system via telegraphs and Morse code, was set up in America. In the 1950s, credit cards began to be employed to cut down on the use of hard currency. The Super Club introduced credit cards in 1950, and American Express rolled out its credit card in 1958.

Phase II FinTech 2.0 (1967—2008): This is the banking age and the transition from the traditional process to technology, Barclays made the inaugural ATM in 1967. Then came the Nasdaq Stock Exchange, which was an entirely automatic stock exchange, in 1971. Then came the application of computers in central banking in the 1980s. E-commerce, online banking, and the internet revolution continued through the 1990s until the world economic crisis of 2008.

-Phase III FinTech 3.0 (2008 to Date): It is startup-driven. FinTech companies arose because people gradually lost confidence in the conventional banking system because of the global financial crisis of 2008. Bitcoin appeared in 2009,

and smartphones gave major companies the ability to create digital wallets like Google Wallet and Apple Pay. (Naifar & Elsayed,2023, p266)

2-3 Finetech tools and uses

Even though there isn't a single agreement on what the main DF technologies are, UNEP (2017) points out that some important technologies behind DF are: big data, machine learning (ML), artificial intelligence (AI), mobile technology, improvements in web-based financing tools, distributed ledger technologies (DLTs) or blockchain, and the Internet of Things (IoT). Because of this, DF includes new financial products.(Hesary & Hyun, 2022, p111).

More and more economic and political happenings, like the 2008 financial crisis and the recent COVID-19 pandemic, have pushed people to use financial technology, or FinTech, to deal with difficult and complex problems. FinTech tools are now commonly used and cover all areas of finance. Figure 1 shows different parts of finance where AI is moving fast, as follows:

Fig 01 : Different applications of fintech



Source: (Jumat & al, 2023, p298)

The Basel Committee on Banking Supervision says financial technology is connected to three main areas that are closely linked to basic banking services:

• Credit, savings, and building up money.

• Sending and receiving money, clearing, and settling payments.

• Managing investments and wealth.

There are two main stages in the development of financial technology:

-The first stage focuses on payment systems and loan services.

-The second stage includes using technology in global money transfers, insurance (called Insurtech), and managing investments and wealth. A new trend in the fintech field is blockchain technology, which is a type of digital record that keeps track of transactions in cryptocurrencies and works without a central authority.(Noureddine & Messemeche, 2024, p1465).

3-FinTech as the core of digital banks' business models

3-1 relationship between fintech and banks

Banks are faced with new competitors who approach banking in different ways, which is disrupting the conventional value chain in the banking sector, new competitors apply technology to provide alternatives to the basic banking functions offered by payment systems and loans. conventionally, banks have applied themselves to producing products, while the new competitors take a more customer-centric approach, two key benefits that retail banks currently enjoy, which could be eroded by the new competitors, appear to be: banks enjoy cheap funding because they can obtain low-interest deposits, which could be eroded because governments appear to support the banking industry in some way retail banks have established customers who provide a source of steady income because the bank can provide them with a range of services. issues relating to reduced profits, changing customer behavior, increased use of mobile technology, increasing use of online services, or increasing levels of competition, among others, continue to put pressure on the banking industry. (Derradj & Mekki, 2022,p434).

3-2 Advantages of fintech on banking operations

There are also new ways of doing business through digital innovation, such as new means of fundraising, cryptocurrencies and crypto assets, peer-to-peer lending, crowdfunding platforms, online markets and aggregators, and insure-tech through smart devices or indexes. Algorithmic traders are taking over stock exchanges, and more financial transactions are taking place without human interaction. The world experienced a double crisis through the COVID-19 pandemic, which had serious impacts on health and the economy.

Mobile money transfer systems, financial technologies, and internet banking can be quite useful in low-income households and small businesses, the economic growth can be stimulated with financial services reaching people who are not being served effectively, and financial inclusion is enhanced with digital financial services.

A person's activity can easily be traced using digital technology in addition digital verification can assist in authentication regarding reputation and trustworthiness

for individuals, companies, or organizations operating under the digital economy. (Hesary & Hyun, 2022, p338).

In most countries, the traditional way of doing banking, which involves physical branches, has either been mixed with or replaced by an online system. This online model uses a lot of information technology and skilled workers. In this situation, shadow banks and other non-banking financial companies are competing with the usual banks.
Blockchain technology allows people to make transactions directly without needing a government or another third party. (Naifar & Elsayed,2023, p 357)
- Assisting More People in Accessing Financial Services: Financial technology assists more people, mostly those with little or no access to banking services, in accessing financial services.
- Improving and Simplifying Banking: Fintech can improve and simplify banking for consumers by providing faster and more customized services.
- Stabilizing the Financial System: Increased competition from new technologies in the financial sector can lead to greater stability of the financial system.
– An Efficient System of Regulation: Technology can help banks in following rules and regulations. The process will become faster and more effective. (Noureddine & Messemeche, 2024, p1467).

3-3 Fintech's Risks and Unintended Consequences on banking operations

Although FinTech technologies have numerous advantages, they also bring some unforeseen issues concerning the economy, society, and environment. The rapidly development of virtual platforms, social networks, and mail systems makes it necessary to focus on data usage and protection of customers. Customers are very anxious about the security and reliability of AI, given the fact that this technology has access to considerable information. Although government authorities are doing everything for data protection, emerging technologies keep changing, leaving some people in doubt, thus creating certain delays in accepting this innovation in different branches of law and employment. The next apprehension concerning digital innovation is the influence it exerts on the environment, including the processes for creating software and hardware, using them, and destroying them. For example, while creating hardware, people need resources that can be extracted from mines and have negative impacts on the environment. Moreover, the power consumption level exercised by the internet is turning into an immense problem. It is estimated that the massive carbon footprint from data centres will grow even bigger in the future because the demand for using internet services will rise by three times in the next decade. Even if intelligent devices are useful for conserving power, they will likely raise the demand for power and data centres. (Hesary & Hyun, 2022, p74).
FinTech advancements may speed up recent trends in the financial industry that are moving credit services away from commercial banks to non-bank companies, which is a wide and growing area. Peer-to-peer (P2P) lending is a key example of this shift. More competition from FinTech lenders like P2P platforms could lower

the profits of traditional banks. As banks try to stay competitive by handing over some of their tasks to outside providers to cut costs, this process of breaking up their business areas could lead to a smaller income. This could make banks more likely to suffer losses and reduce their stored earnings, which is a main source of their own capital. The P2P lending model has built-in risks for financial stability, as shown by Nemoto et al. in 2019. There are bad reasons for platforms to offer loans without taking on some of the risks involved. For instance, P2P platforms often get money based on how much lending they do, which might lead them to give out more loans without checking credit standards properly. This is happening in several countries. (Hesary & Hyun, 2022, p95).

3-4 the role of open banking in integrating fintech into the financial ecosystem

Open banking refers to an process by which banks make their customers' financial information available to other providers. This gets done with customers' consent and occurs in a safe and secure environment. Open banking assists customers by developing innovative financial services and making financial products more accessible and cheaper.

In the past, financial institutions such as banks had control over a customer’s financial information.

FinTech firms, however, tend to take advantage of better data analysis solutions. This means that through collaboration, both banks and FinTech firms can enhance their risk analysis capabilities in the financial sector. In addition, Open Banking allows regulators to monitor FinTech firms more effectively as they become part of the overall financial system. (Jumat & al, 2023,p323)

4. FinTech in Emerging Economies: Saudi Arabia's Pioneering Model

In this important section, we address the challenges facing digital banks' adoption of FinTech in emerging economies. We then examine Saudi Arabia's regulatory framework and government initiatives that transformed these obstacles. We also analyse digital banking models, economic performance, and successful risk mitigation strategies under Vision 2030.

4.1. Challenges of Digital Banks’ Adoption of Financial Technology in Emerging Economies

This section discusses key challenges that limit the spread of digital banking in emerging economies. It focuses on four main themes: competition and adoption barriers, infrastructure problems, Algeria as an illustrative example, and finally Saudi Arabia’s different approach in dealing with these issues.

4.1.1 Competition and Adoption Barriers: Competition is a big problem. Big banks take away 15 to 20 percent of the market from new FinTech companies in just two years. Also, many people in poorer countries don’t know much about money matters. A report from the World Bank in 2021 says that only 35% of

adults have bank accounts or use financial services. This lack of knowledge makes it hard for many to use digital banking services, (World Bank Findex, 2021).

4.1.2 Infrastructure Problems: Bad internet connections cause more issues. GSMA data shows that 60% of people in rural areas have unreliable or no internet. This makes it hard for them to use digital banking services properly. (GSMA Mobile Economy Emerging Economies, 2024, p. 45).

4.1.3 Algeria as an Example: Algeria shows these issues very clearly. In 2023, 65% of financial institutions faced cyber attacks—more than the average in the Middle East and North Africa region. Also, government delays stopped 80% of FinTech license applications. Plus, 45% of Algerians don't have bank accounts, and 55% of people in rural areas can't get reliable internet. These problems are similar to the global trends we talked about earlier. (GSMA, 2024, p. 47).

4.2. Regulatory Framework and Government Initiatives of KSA

The regulatory framework in Saudi Arabia represents an advanced model supporting Financial Technology (FinTech) within Vision 2030, aiming to enhance financial inclusion and economic diversification (SAMA, 2024, P 15)

4.2.1 Regulatory Achievements :

By the end of 2024, the number of FinTech companies in Saudi Arabia had reached 261, which is more than the goals set by the Financial Sector Development Program (FSDP). The country is expected to have 525 FinTech companies by 2030. Here is how the licenses were distributed according to SAMA's 2024 report (Page 28): Saudi Central Bank (SAMA): 138 companies, and the Capital Market Authority (CMA): 52 companies, and the Insurance Authority (IA): 14 companies.

4.2.2 Evolution of FinTech Companies:

There is a huge rise in the FinTech firms in Saudi Arabia, which rose from 14 companies in 2020 to 261 companies in 2024. This is a 1.76% increase over a period of four years. There was a huge rise of 147 companies in 2022 and 261 companies in 2024, which is a 21% increase because of Vision 2030, governmental encouragement, and the SAMA licensing system. (SAMA, 2024, P 28).

SAMA began the initiative in 2018. It aims to oversee the licensing and operations and facilitate new financial technologies. They have distributed 41 licenses by 2024, with 11 fully online digital banks. This enabled the Arabian Gulf leader to be the number one region for the development of FinTech. (SAMA, 2024, P 28).

4.2.3 Government Initiatives :

The government is moving towards a more digital economy for Saudi Arabia under Vision 2030 and is pressing for a regulatory environment conducive to fintech development. Important players within this scenario include:

- The Instant Payment System or SARIE supports payments on a real-time basis round the clock. It had been operational since the year 2020. By the year 2023, it

handled about SAR 1.2 trillion of business, which marked a 40% increase compared to the preceding year, marking the beginning of the adoption of payments through technological mediums (SAMA Annual Report, 2023, p. 35).
SAMA's Sandbox enhances innovation and results in the growth of approximately 200 new services ranging from robot advisory to crowdfunding platforms (Al-Jasser, 2022, p14

4.3. Digital Banks and Companies Models:

This part looks at how digital banking actually appears on the ground in Saudi Arabia. It reviews the main licensed digital banks, the most prominent business models they follow, and the rapid shift toward electronic payments across the country.

4.3.1 Overview of Key Players

Saudi Arabia's digital banking landscape features 11 fully licensed digital banks complementing traditional institutions with seamless app-based services (SAMA, 2024, P 45). These banks leverage FinTech for lending, payments, and investments, serving 28 million digital users (70% of population) (SAMA, 2024, P 45)

4.3.2 Prominent Models

- **STC Bank:** A fully digital bank offering loans and payment services via an application, which has acquired 2 million customers in addition to holding deposits of SAR 50 Billion (STC Bank, 2024, p.10).
- **Saudi Islamic Bank Digital:** It focuses on Islamic digital finance and has already experienced a 150% increase in its portfolios to SAR 30 billion (SIB, 2023, p. 20)
- **Other Models**: UrPay (most popular mobile payment solution with 10 million customers), Tamara (buy-now-pay-later, with funding of SAR 5 billion) (SAMA, 2024, P 50)

4.4. FinTech Economies Performance and Global FinTech index:

This section shows how well FinTech is performing in Saudi Arabia and how the country ranks worldwide. It looks at key numbers for growth at home and at its position in the Global FinTech Index.

4.4.1 FinTech Economies Performance

Saudi Arabia's FinTech sector reached $3.5 billion, helping to cut the number of unbanked people from 20% to 10%, this growth also contributed 2.5% to the country's GDP by improving efficiency (SAMA, 2024, p 32). Table 2 below shows key performance indicators that show how quickly FinTech is developing in KSA

Table 01: Key Performance Indicators (2023-2024)

Indicator	2023	2024	Growth (%)
Market Size in ($ bn)	2,8	3,5	25
Digital Payments (SAR Tn)	1,2	1,4	45
E-Wallets (Million)	15	18	20
Digital Lending (SAR Bn)	100	150	50
Unbanked Reduction (%)	20	10	50

Source: Compiled by researchers from SAMA FSDP 2024 (pp 22, 35).

We can understand the following points from the table above: An average growth rate of 38% reflects that the whole ecosystem is expanding rapidly where digital payments are growing at 45% and they are the fastest area of growth. Digital lending is increasing at a rate of 50% and it is the most scalable, thereby, it is the one which can help small and medium businesses with more than SAR 150 billion. The decrease in the number of unbanked people by 50% indicates that providing finance to more people has been made the main target. The growth of market size by 25% is an indication of investors' confidence and the growth of e, wallets by 20% is an indication that a larger number of consumers are starting to use them.

4.4.2 Global FinTech index

A Global FinTech index is a ranking system that evaluates the position of financial technology in various countries. It is a different kind of ranking the world that relies heavily on the number of private FinTech companies in a specific area, their influence, and the local business environment for each place. The 2021 edition of the index included 11, 000 FinTech companies from 264 cities in 83 countries.

Saudi Arabia was ranked 65th out of 83 countries and was ninth in the Middle East and Africa region. The kingdom had two cities listed in the city rankings, Riyadh, and Jeddah. Riyadh was ranked 126th out of 264 cities, and Jeddah was 186th**.** (Naifar & Elsayed,2023, p266).

4.5. Challenges and Risks: Saudi Arabia's Successful Mitigation Strategies :

The the table below shows the four main problems facing the Saudi FinTech environment. It compares these issues with data from reports from 2023 before any actions were taken. The table also explains the steps taken by regulators to solve these problems and the results after those steps were implemented. This shows a proactive and data-based approach that matches the goals of the Financial Sector Development Program (FSDP). The analysis shows how challenges like a 30% increase in cyber attacks and a 15% rate of not following Anti-Money Laundering rules were handled using AI tools, regulatory technology platforms, trained workers, and partnerships between banks and FinTech companies.

Table 02 : Key Challenges and Risks in the Saudi FinTech Sector and Mitigation Strategies with Outcomes

Dimension	Pre-Intervention Challenge Status	Primary Mitigation Tool/Strategy	Quantitative/Qualitative Outcome Post-Intervention
Cybersecurity	Cyber attacks rose by approximately 30% in 2023 against financial and FinTech institutions in the Kingdom	AI-supported threat detection systems and Cyber Drill 2024 exercises in collaboration with the National Cybersecurity Center	Reduction in incidents/breaches by about 25% over 12 months
FinTech Talent Gap	Shortage estimated at around 60% in specialized technical and regulatory FinTech skills	FinTech Saudi initiatives, FinTech academies, university partnerships, and business accelerators	Rise in job saturation rates in digital banks and FinTech firms approaching two-thirds of needs 68%
Competition with Traditional Banks	Loss of market share for FinTech to traditional banks estimated at around 10% in some services	Cooperative competition model: Partnerships and co-developed products (Open Banking, APIs, shared payment solutions)	Growth in "hybrid" assets and services (shared between banks and FinTech) by about 20–25% and improved digital payment transaction values

Source: Prepared by the researchers based on reports from the Saudi Central Bank (Financial Stability Report 2024 and Financial Sector Development Program), FinTech Saudi initiative, and academic studies on the Saudi financial sector.

The table shows that Saudi Arabia dealt with FinTech challenges by using a system-wide approach that included strong regulations and the use of modern technology, especially in cybersecurity and following rules. This led to a real decrease in problems and violations. It also shows that to handle the shortage of skilled workers and compete with traditional banks, Saudi Arabia didn't push out existing banks. Instead, they worked together through things like Open Banking and shared platforms, and also developed national programs to build talent. This helped turn some risks into chances for creating more efficient and lasting business models that mix traditional and new finance.

Conclusion

This study shows that FinTech and digital banks have become a key lever for modernizing financial systems in emerging economies, and that the Kingdom of Saudi Arabia has managed to translate this potential into concrete results. Starting

from the main question of how an emerging economy can push forward the transition toward digital banking and FinTech, the analysis highlights three core factors in the Saudi case: a clear national vision, an enabling and adaptive regulatory framework, and a rapidly developing digital and banking ecosystem.

Empirically, the findings reveal a strong quantitative expansion of the FinTech sector. The number of licensed FinTech firms increased to more than 200, alongside 11 fully digital banks serving about 28 million digital users. Market size reached roughly 3.5 billion dollars, indicating a shift from experimental initiatives to a sector with real macroeconomic weight. In parallel, financial inclusion improved significantly, as the share of unbanked adults declined from nearly 20% to 10%, supported by the spread of digital payments, e-wallets, and digital lending solutions directed at individuals and small and medium-sized enterprises.

In terms of usage and business models, electronic payments now represent close to four-fifths of retail transactions, with non-cash operations rising steadily year after year. The study identifies a diversified set of digital actors and models: a universal digital bank such as STC Bank, an Islamic digital finance bank, large-scale wallet providers like UrPay, and buy-now-pay-later platforms such as Tamara. This diversity has helped cover multiple market segments and embed digital financial services into everyday economic practices.

Regarding risks, the study finds that Saudi Arabia faced higher cyber threats and compliance challenges but responded through a system-wide approach combining technology and regulation. AI-driven cybersecurity tools, shared RegTech platforms, and unified know-your-customer rules contributed to a tangible reduction in incidents and improved supervisory efficiency. The FinTech talent gap was addressed via training programs, dedicated academies, and university partnerships, while competition with traditional banks was channelled into “cooperative competition” through open-banking interfaces, shared payment solutions, and jointly developed products. This approach transformed part of the risk into opportunities for hybrid business models that combine the strengths of both traditional and digital finance.

At the international level, Saudi Arabia still occupies a mid-range position in global FinTech rankings but holds a relatively advanced place within its regional context, with Riyadh and Jeddah listed among globally ranked cities. This confirms that the Saudi experience has reached an important stage of maturity, while remaining open to further innovation and deeper regional integration.

Algeria, as an emerging economy facing similar structural constraints in infrastructure and financial inclusion, can benefit from this trajectory by adopting a clear, country-specific FinTech roadmap and by using digital payments and wallets as practical tools to reduce the share of unbanked citizens, especially in rural areas.

Recommendations

- Policy level: Develop a national FinTech and financial-inclusion strategy with measurable digital targets and a regulatory sandbox to test new products under controlled conditions.
- Banking and FinTech level: Promote concrete partnerships in payments, e-wallets, and digital lending, while prioritizing investment in cybersecurity and specialized human capital.
- Research level: Encourage comparative studies of Arab FinTech experiences, focusing on which elements of the Saudi model can be transferred to contexts such as Algeria and how they should be adapted to local legal and economic realities

Bibliography

Articles:

-Derradj Yasmine & Mekki Hadjer, (2022), Crowdfunding , one of the financing solutions (State study of the Algerian Crowfunding platforms), journal of the Manager,09, PP : 427-453.
-Noureddine imene & Messemeche nadjet, (2024), Advancements in Fintech and AI: Transformations in the Arab Financial and Banking Sector, journal of El-Manhel Economy, 07, Number: 02, PP: 1459- 1470.
-Rym BOUCHELIT & Fatima BENOUZIANE, (2023), Transformation numérique du secteur bancaire : Open Banking et Fintech Digital Transformation of Banking Sector: Open Banking and Fintech, Economic Researcher Review, 11,NO 02, PP96-110.
- Alsmadi, A., Al-Harbi, F., & Al-Harbi, M. (2023). Impact of business enablers on banking performance: A moderating role of FinTech. Banks and Bank Systems, 18(1), Available at: https://doi.org/10.21511/bbs.18(1).2023.01.

Books:

-Farhad Taghizadeh-Hesary & Suk Hyun, (2022), Green Digital Finance and Sustainable Development Goals, Springer.

-Nader Naifar & Ahmed Elsayed, (2023), Green Finance Instruments, FinTech, and Investment Strategies Sustainable Portfolio Management in the Post COVID Era, Springer.
-Zul Hakim Jumat & Saqib Haiz Khateeb & Syed Nazim Ali, (2023), Islamic Finance, FinTech, and the Road to Sustainability Reframing the Approach in the Post-Pandemic Era.

Reports :

-Capital Market Authority (CMA). (2024). Annual report 2024.

-International Monetary Fund. (2022). FinTech in emerging markets. IMF FinTech Notes.
-Saudi Arabian Monetary Authority (SAMA). (2023). *Fifty-ninth annual report*, Saudi central bank, Riadh.
-Saudi Arabian Monetary Authority (SAMA). (2024). *Financial sector development program annual report 2024*, Saudi central, Riadh.
-Saudi Arabian Monetary Authority (SAMA). (2024). *Saudi FinTech report* Saudi central bank.
-Saudi Islamic Bank. (2023). Digital strategy report.
-STC Bank. (2024). Annual performance report.
-World Bank. (2021). The global Findex database 2021.
Papers Presented at Conferences:
-Al-Jasser, M. (2022). Digital transformation in banking: Saudi experience. University of El Oued Digital Repository. Available at: https://dspace.univ-eloued.dz/bitstreams/14bdd8e9-f945-493f-a19b-24c685de02e3/download
Websites:
-GSMA. (2024). *The mobile economy 2024: Emerging markets*. Available at: https://www.gsma.com/mobileeconomy/emerging-markets/
-https://www.fsb.org/work-of-the-fsb/financial-innovation-andstructural-change/financial-innovation
-https://www.worldbank.org/en/topic/fintech
--PwC. (2023). Global digital trust insights 2023. Available at: https://www.pwc.com/gx/en/issues/cybersecurity/global-digital-trust-insights-2023.pdf