

Requirements for Activating Digital Finance in Algeria in Lights of the Saudi Experience

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Abstract:

This study aims at examining the requirements for activating digital finance in Algeria and the mechanisms to enhance it, shedding light on the experience of Saudi Arabia as a leading example in this field in an attempt to benefit from it. This is achieved by analyzing the factors that contributed to the success of this experience.

The study results indicated that Saudi Arabia has developed legislation, regulations, and regulatory frameworks that facilitate the spread of digital financial and banking services. It has also encouraged innovation in this field and monitored efforts to upgrade the digital infrastructure of the financial and banking system. On the contrary, digital finance indicators in Algeria, revealed a lack of individuals' access to digital financial services provided by the official sector, The study recommends the adoption of a national strategy focused on developing financial infrastructure, improving the business environment, and spreading financial literacy.

Keywords: Digital Finance ; Digital Commerce; Digital Transfers; Electronic Point of Sale.

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1.Introduction

The signs of the Fourth Industrial Revolution in the banking sector emerged at the beginning of the third millennium, marking one of the most significant transformations in human history. This revolution played a major role in the development of the financial and banking services sector. The immense digital and technological advancements had a profound impact on various financial and banking transactions through accelerating the transfer of information and giving rise to numerous innovations. One such innovation is known as "digital finance," a result of combining traditional financial services with digital technologies such as the internet, the Internet of Things, artificial intelligence, big data, cloud services, and block chain. Its key characteristics include innovation, speed, and precision.

Saudi Arabia is considered a leading model in the Arab world for adopting digital finance. This is attributed to its strategic vision, which relies on adopting legislative and institutional frameworks that support digital finance, developing digital infrastructure, formulating digital strategies, and adopting global indicators and practices. The ultimate goal is to achieve high digitization across all economic sectors and promote sustainable development.

Following the path of all countries, recognizing the importance of digital finance, Algeria has directed its efforts towards adopting specific strategies. These strategies encompass a range of measures aiming at enhancing and elevating digital

finance levels in accordance with the particular financial environment.

The topic of digital finance and financial services had attracted significant attention from the Bank of Algeria, recognizing its importance in completing the path of banking reforms and establishing a modern national banking system. In the light of the aforementioned, we have formulated the research questions of our study as follows:

What are the requirements for activating digital finance in Algeria in light of the Saudi experience?

From this main question, several sub-questions related to the study emerged, including:

- What are the most important means and tools of digital finance?
 - What are the reasons for the success of the Saudi experience in adopting digital finance?
 - What is the current state of digital finance in Algeria?
 - What are the key requirements for activating digital finance in Algeria?
- To achieve the study's objectives and answer the questions stated above, we formulated the following hypotheses:
- Digital finance relies on the latest technological advancements, including point-of-sale systems, ATMs, digital transfers, and others.
 - Saudi Arabia possesses an advanced technological infrastructure that helped establishing the foundations of digital finance.
 - Digital finance in Algeria is still in its early stages of growth and penetration.

- One of the key requirements for activating digital finance in Algeria is the necessity for supportive, modern, flexible, and open legal systems and regulations, coupled with efforts to develop digital infrastructure and increase financial literacy.

The study derives its significance from the economic and social importance of digital finance, which has become a crucial demand in solving Algeria's economic problems. Digital finance enhances financial stability, economic development, and achieves digital financial inclusion. Hence, the study's importance lies in the following key points:

- Clarifying various concepts of digital finance.
- Analyzing the experience of Saudi Arabia in the field of digital finance.
- Understanding the current state of digital finance in Algeria.
- Identifying the requirements for activating digital finance in Algeria and drawing lessons from the Saudi Arabia's experience in this field.

To explore the reality of digital finance in Algeria and its activation requirements in lights of the Saudi Arabia's experience and to find answers to the aforementioned research questions, a descriptive methodology is used. This approach involves collecting information to provide an accurate description of the study variables and various related influencing elements. Additionally, an analytical methodology is adopted across all study axes to deepen the understanding, analyze the components of the subject, and derive meaningful interpretations and conclusions, especially regarding the

requirements for activating digital finance in Algeria and the efforts made to achieve it.

2. Literature Review

Here is a sample of previous studies related to the study's topic:

- **Peterson K Ozili (2018) Study:** This study discusses digital finance and its impact on financial inclusion and stability. It concludes that digital finance, through financial technology providers, has positive effects on financial inclusion in both emerging and advanced economies. The convenience provided by digital finance for individuals with low income is often more valuable to them than the higher costs they would incur for traditional services.

- **Belehcene Fatima Zahra, Adel Fatima Zahra(2020) Study:** This study aims to reveal the contribution of digital finance technologies in accelerating the transition to the digital economy. The study concludes that the more digital finance technologies are utilized, the faster the adoption of financial technology, thus progressing towards a digital economy through digital platforms and modern technologies.

- **Suoyelgoni, J. U. J. Onwumere, and Itotenaan Henry Ogiri, (2020) Study:** This study investigates the impact of digital finance on the Nigerian Gross Domestic Product. The study finds no significant causal impact of digital finance channels such as ATMs, point-of-sale systems, and NIP (Nigeria Inter-Bank Settlement System Instant Payment) on the Nigerian Gross Domestic Product. The study also highlights the lack of digital infrastructure, security challenges, and insufficient focus on research and

development affecting the growth of the digital finance environment.

- **Belkhir Amoumen, Mouhammed Aichouche (2021) Study:** This study aims to understand the reality of digital finance in Algeria and its role in promoting financial inclusion. The study presents and analyzes indicators and statistics on the state of digital finance in Algeria. Despite efforts to develop electronic financial services, Algeria is still far from achieving the desired goals of financial inclusion compared to other Arab and Western countries that have succeeded in enhancing financial inclusion through electronic financial services.

Our study builds upon these previous studies, addressing the reality of digital finance in Algeria. It explores its importance in solving Algeria's economic problems, enhancing financial stability, economic development, and achieving digital financial inclusion. The study also delves into the significant challenges it faces and the key requirements for its activation, drawing insights from the Saudi Arabian experience.

3. The Theoretical Framework of Digital Finance

Digital finance is a modern economic term that has recently emerged and attracted considerable attention from researchers due to its importance in the development and progress of many countries that have hastened to adopt it.

3.1 Definition of Digital Finance

Digital finance is a financial service provided through mobile phones, personal computers, the internet, or cards associated with a reliable digital payment system. It

allows for the provision of low-cost, convenient, and secure banking services, granting individuals greater control over their personal finances, facilitating quick financial decisions, and enabling payments and receipts. This gives a new shape to the financial and banking industry. (Durai, 2019, p. 122)

Digital finance involves financial transactions in an electronic environment, offering financial services outside traditional bank branches. These services transcend traditional banking branches, using agents (third parties) as the primary contact point with customers, accessed and provided through digital channels. (Suoyelgoni, 2020, p. 2)

Digital finance is a financial innovation associated with introducing new tools that financial institutions rely on to enhance the efficiency of the services they offer to their clients. It encompasses a wide range of financial areas, including payments, money transfers, savings, investments, and personal financial management. Digital financial services can be provided to large enterprises as well as small and medium-sized enterprises (Ahmed Al- Dmour, 2021, p. 481).

In summary, digital finance is a package of financial services and products associated with digital technologies, delivered to individuals and institutions through smart devices without direct interaction with the service provider, allowing access at any time and place.

3.2. Benefits of Digital Finance

3.2.1 Increased Financial Inclusion:

Digital finance leads to increased financial inclusion, expanding financial services to non-financial sectors and providing

essential services to individuals (AtinaShofawati, 2019, p. 392).

3.2.2 Enhanced Individual Well-being:

Digital finance improves the well-being of individuals and companies with official bank accounts, facilitating multiple financial transactions.

3.2.3 Cost Reduction: The introduction of electronic technologies in handling transfer orders, payments, and checks has reduced time and transportation costs for users, allowing the transition from cash-based to official digital financial transactions on secure digital platforms.

3.2.4 Achieving Performance Efficiency:

Modern technologies enable banks to manage a vast number of bank accounts for their clients without the need to increase the number of employees, ensuring speed in transaction processing.

3.2.5 Boosting Gross Domestic Product (GDP):

Digital finance contributes to enhancing the GDP of digital economies by providing a variety of financial products, services, and credit facilities to individuals and various types of companies. This can stimulate overall spending, improving GDP levels and contributing to economic stability and increased financial intermediation.

3.2.6 Offering New Services: The application of modern technologies has empowered banks to provide new services that were previously unknown. Customers now benefit from better opportunities to utilize their funds, improving the well-being of individuals and companies with official bank accounts. (Ozili, 2018, p. 6) It also helps to have more control over personal finances, enabling quick financial decisions, and the ability to make and

receive payments within seconds. (others, 2016, p. 9)

3.3. Tools and Means of Digital Finance

3.3.1 ATMs (Automated Teller Machines): ATMs perform essential bank functions through a plastic card with a magnetic strip, usually issued by financial institutions. These cards contain unique card numbers and security information, allowing customers to perform various banking transactions 24/7, such as cash withdrawals, balance inquiries, fund transfers, and bill payments. (Ibrahim Danlami, 2014, p. 3)

3.3.2 Mobile Phones: Also known as mobile banking, these services are facilitated through user-friendly mobile applications, enabling customers to conduct transactions such as money transfers, bill payments, and balance checks 24/7. (Mustafa, 2021, p. 89)

3.3.3 Electronic Point of Sale (ePOS): These are devices located in commercial and service institutions, stores, gas stations, etc., allowing customers to make payments using smart cards. The cards are swiped through electronically connected machines tied to bank accounts, facilitating retail operations. (Sylvia Njenga, 2017, p. 2)

3.3.4 Home Banking: This involves the customer's personal account accessible at home, the office, or any other location connected to the bank account. It allows customers to perform banking transactions electronically from home or any other place, obtain information about their bank accounts via the phone, and make bill payments without the need to travel. (Eric von Hippel, 1996, p. 4)

3.3.5 Digital Commerce: Although there is no universally accepted definition of

digital commerce, it generally includes digitally possible transactions in the trade of goods and services that can be delivered digitally or physically. This encompasses transactions involving consumers, businesses, and governments. (Javier López González, 2017, p. 5)

3.3.6 Digital Transfers: Digital transfers involve the electronic transfer of monetary value from one account to another. It represents a low-cost platform that does not require face-to-face interaction to transfer money between accounts held by different holders. Digital transfers include commercial transactions (bill payments for small businesses outside the point of sale) and non-commercial transactions such as financial transfers within family circles. (Shy, 2012, p. 1)

4. Saudi Arabia's Experience in Digital Finance

Since 2016, Saudi Arabia has embraced a digital transformation in its financial sector as part of its 2030 initiative vision. In regard of the significant progress of Saudi Arabia in the field, it is important to analyze

key statistics related to digital finance indicators.

4.1 Analysis of Digital Finance Indicators in Saudi Arabia

Saudi Arabia stands out as a leading country in digital finance within the Arab region and has become a successful global example. The evolution of digital financial services in the country has positively impacted various digital finance indicators. The following analysis highlights some of these key indicators.

4.1.1 Digital Commerce:

The proliferation of smart phones and internet connectivity in Saudi Arabia has shifted consumer behavior from traditional in-store purchases to online shopping through e-commerce platforms and mobile applications. This transformation has resulted in a substantial increase in the value of online commerce transactions.

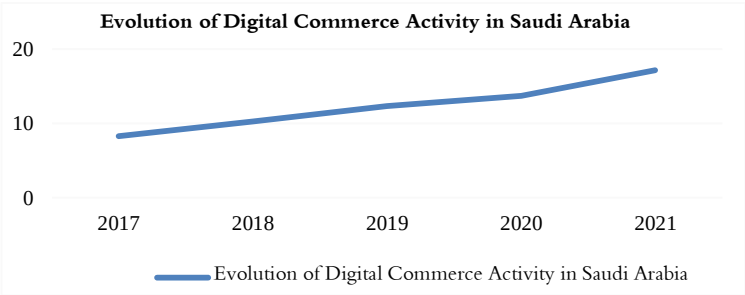
Table 1: Evolution of Digital Commerce Activity in the Kingdom of Saudi Arabia (2017-2021)

Year	Transaction Value by Sector (Billion USD)	Change in Transaction Value by Sector (%)	Average Transaction Value per User (Thousand USD)	Users by Category (Million Users)	Penetration Rate by Sector (%)
2017	8,33	/	0,46	18,2	55,0
2018	10,30	23,6	0,46	22,3	66,1
2019	12,38	20,2	0,52	23,7	69,1
2020	13,72	10,8	0,54	25,6	73,5
2021	17,15	25,0	0,61	28,4	80,2

Source: FinTech Report , 2021.

The evolution of e-commerce activity in Saudi Arabia can be illustrated during the period 20 through the following figure:

Figure 1: Evolution of Digital Commerce Activity in Saudi Arabia (2017-2021)



Source: Compiled by the researchers based on data from Table 1.

Observing Figure 1, it is evident that the digital commerce market in Saudi Arabia experienced significant growth and development throughout the study period. In 2017, the value of digital commerce transactions exceeded 8.33 billion USD, with the number of internet users for digital commerce reaching 18.2 million users. The subsequent year witnessed a 23.6% increase, recording a value of 10.30 billion USD with 22.3 million users. The upward trend continued, reaching 17.15 billion USD in 2021 with 28.4 million users. This can be attributed to the increased internet penetration, rising usage of smartphones, and growing support from

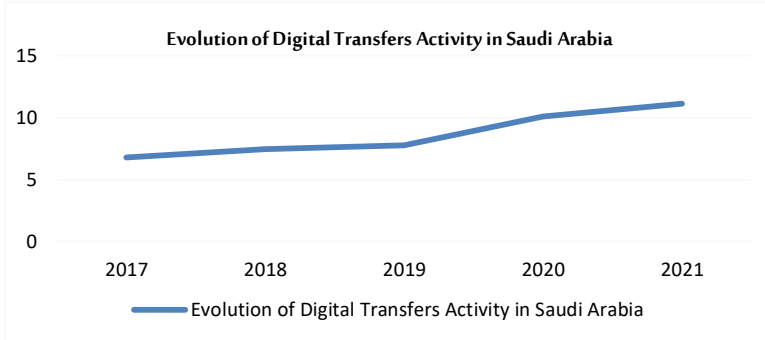
governments and decision-makers, as outlined in 2030 Vision, along with advancements in electronic payment systems and shipping/delivery services.

4.1.2 Digital Transfers : Thanks to digital technology, individuals and companies in Saudi Arabia can now make transfers at any time and from anywhere without the need to visit banks or use traditional methods or channels. This has led to continuous development, as illustrated by the following table.

Table 2: Evolution of Digital Transfers Activity in Saudi Arabia during the Period 2017-2021

Year	Transaction Value by Sector (USD Billion)	Change in Transaction Value by Sector (%)	Average Transaction Value per User (USD Thousand)	Users by Category (Million Users)	Penetration Rate by Sector (%)
2017	6.79	/	21.69	0.3	0.9
2018	7.46	9.9	19.28	0.4	1.1
2019	7.80	4.5	16.18	0.5	1.4
2020	10.13	29.9	17.01	0.6	1.7
2021	11.14	10.0	15.48	0.7	2.0

Source: FinTech Report 2021.

Figure 2: Evolution of Digital Transfers Activity in Saudi Arabia during the Period 2017-2021

Source: Compiled by the researchers based on the data from Table 2.

Through the figure, it becomes clear that the value of digital transfers activity in the Kingdom of Saudi Arabia has witnessed continuous development throughout the study period. In 2017, the value reached USD 6.79 billion with 0.3 million users. It increased the following year by 9.9%, recording a value of USD 7.46 billion with 0.4 million users. This development continued until it peaked in 2021, reaching a value of USD 11.14 billion with 0.7 million users. This is attributed to the fact that digital transfers are secure and efficient, employing encryption and protection technologies to ensure the confidentiality of transferred information.

They also facilitate tracking and auditing processes, leading to changes in consumption and spending behaviors within many Saudi families. The infrastructure for digital payments in Saudi Arabia has contributed to achieving steady and remarkable growth in the volume of digital transactions.

4.1.3 Electronic Points of Sale (ePOS):

Electronic payment solutions in Saudi Arabia have diversified in recent years. ePOS services, a modern form of electronic banking services, have rapidly spread. They have had a positive impact on the country's productivity across all sectors, as illustrated in the following table.

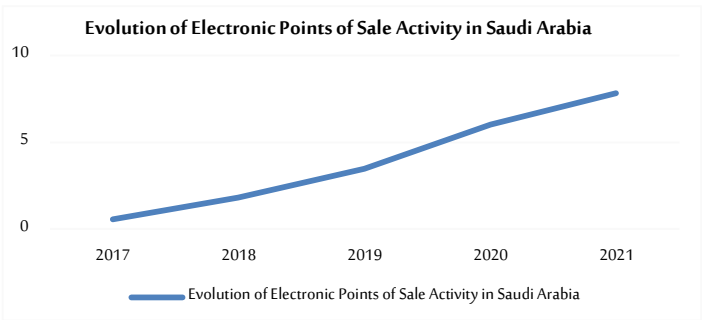
Table 3: Evolution of Electronic Point of Sale Activity in Saudi Arabia during the Period 2017-2021

Year	Transaction Value by Sector (USD Billion)	Change in Transaction Value by Sector (%)	Average Transaction Value per User (USD Thousand)	Users by Category (Million Users)	Penetration Rate by Sector (%)
2017	0.57	/	0.30	1.9	5.8
2018	1.82	219.4	0.45	4.0	11.9
2019	3.47	90.9	0.61	5.7	16.6
2020	6.03	73.9	0.77	7.9	22.6
2021	7.82	29.7	0.92	8.5	24.0

Source: FinTechReport 2021.

The evolution of Electronic Point of Sale (ePOS) activity in Saudi Arabia during the period of 2017-2021 can be illustrated through the following figure:

Figure 3: Evolution of Electronic Point of Sale Activity in Saudi Arabia during the Period 2017-2021



Source: Compiled by the researchers based on data from Table 3.

We observe from the table that the activity of electronic point of sale (ePOS) in Saudi Arabia has witnessed significant development. After reaching a value of \$0.57 billion with 1.9 million users in 2017, it experienced a substantial increase in the following year by 219.4%, recording a value of \$1.82 billion with 4 million users. This upward trend continued until it peaked in 2021, registering a value of \$7.82 billion with 8.5 million users. This evolution was a result of increasing consumer interest in conducting electronic payments and managing their accounts through internet applications. Additionally, the COVID-19 pandemic played a role in pushing individuals to reduce reliance on cash by compelling all stores to provide ePOS devices. Furthermore, Saudi Arabia's support for innovations and new services in the payment sector contributed to increasing the efficiency and development of electronic payment methods, accelerating growth in this field.

4.2. Factors Contributing to the Success of Digital Finance in Saudi Arabia

success of digital finance in Saudi Arabia resulted from several factors, including:

4.2.1 Digital Infrastructure: Saudi Arabia possesses a robust digital infrastructure, providing various elements for offering information technology and communication services. This includes mobile and fixed devices, infrastructure, data center networks, smart phones, and other sensory devices ;all essential for digital finance. The Saudi government has actively worked on updating its information technology and communication infrastructure, making significant progress in broadband fixed networks, with nearly 60% of households covered by fiber optics at an average fixed broadband speed of 79.6 Mbps. In mobile coverage, 94% of the population is covered by 4G technology. Additionally, Saudi Arabia was among the first countries to launch commercial services for 5G networks. To address the rapid growth of data, the government opened the first cloud data center in Saudi Arabia in 2018,

partnering with the German business software giant SAP. The integration of data analytics and artificial intelligence across various aspects of modern life is facilitated through a network of sensors and other Internet of Things devices.

4.2.2 Mobile Broadband Penetration:

Saudi Arabia ranks highest globally in terms of free internet access, with 93% of its population having internet access capabilities. It also holds the fourth position among the Group 20 countries in individual internet access. **Source spécifiée non valide.**

4.2.3 Trust and Security: Saudi Arabia is a leader in the field of cyber security, ranking first regionally and 13th globally in the Global Cyber security Index. This has led to an increase in digital payments, constituting 75% of total payments in 2020. This shift towards digital payments was accompanied by a significant decrease in cash withdrawals (30%) compared to 2019, indicating a strong inclination towards digital transactions. The Central Bank of Saudi Arabia has played a crucial role in enhancing cyber security by launching regulatory guidelines such as the Cyber security Regulatory Framework, Business Continuity Regulatory Framework, and Cyber security Simulation Regulatory Framework. The establishment of cyber security foresight centers aims to provide a clear and detailed vision of the cyber security landscape for the financial sector. Moreover, the Central Bank of Saudi Arabia, in collaboration with the Caporn Institute, launched the third version of the specialized cyber security program, aimed at training and qualifying national cadres in the financial sector.

4.2.4. Legislative and Regulatory Frameworks:

The Saudi Arabian Central Bank has actively worked to promote innovation and support new and innovative ideas in the financial sector. In 2018, it designed a regulatory sandbox environment aimed at establishing a regulatory framework for digital payment infrastructure, enhancing the effectiveness and flexibility of financial transactions. The Central Bank issued instructions and regulations supporting financial technology and digital transformation in the financial sector. This includes the opening of bank accounts and electronic wallets for individuals and institutions. Furthermore, guidelines and additional standards were issued for applying for licenses for digital banks in Saudi Arabia, along with regulatory rules for providing digital payment services, including licensing electronic wallets and the development of a payment system and its services in Saudi Arabia.

5. Current State of Digital Finance in Algeria and Its Activation Requirements

Amid rapid technological advancements, Algeria has shown interest in utilizing and developing digital finance technologies, with a focus on the postal sector, information technology, and communication. This strategic choice aims to develop this sector.

5.1. The Algerian Efforts to Develop Digital Finance:

Recognizing the importance of digital finance, the Bank of Algeria has intensified efforts to develop digital finance in response to the COVID-19 pandemic. Algeria has undertaken the following initiatives:

5.1.1. Development of Information and Communication Technology

The government implemented measures to construct a digital society. Notably:

- Provision of foundational facilities: Algeria possesses ground, maritime, and satellite communication facilities for wired and wireless rapid-flow communication. This includes:

- The fiber optic link connecting Algeria to AinGuazam, an integral part of the fiber optic maritime link between Algiers (Algeria) - Zander (Niger) - Abuja (Nigeria).

- The maritime fiber optic link between Oran (Algeria) and Valencia (Spain) with a capacity of 100 gigabits per second.

- The widespread deployment of 3G mobile technology since 2014, covering all of Algeria, gradually transforming it into high-speed 4G technology. Future plans include adopting 5G technology and the Internet of Things.

- The ALcomsat-1 satellite for communications, launched by Algeria in 2017, connects the entire national territory to the Internet, including isolated areas. The coverage extends to some African countries.

- Creating a trustworthy environment to increase trade and financial exchanges through electronic communications. Algeria has supported this through:

- The Digital Post and Telecommunications Regulatory Authority, responsible for regulating the electronic postal and communication market.

- Three authorities for electronic certification: a national authority overseeing supervision and management, a government authority

providing electronic certification services for the government and state institutions, and an economic authority dedicated to economic institutions. These authorities officially started operating in March 2021.

- Establishing a legal and institutional framework conducive to a trustworthy environment suitable for developing information and communication technology use.

5.1.2. Encouraging the Use of Digital Products:

In March 2020, the Bank of Algeria issued a system stipulating the provision of certain banking services free of charge (bank card, annual account statement, ATM usage, providing merchants with electronic payment devices, etc.). This aims to incentivize customers to use electronic payment methods and encourage banks to innovate and offer products and services that align with modern technological developments.

5.1.3. Encouraging E-commerce:

Algeria has actively worked to promote online marketing and e-commerce through:

- Enacting laws regulating e-commerce and developing several frameworks online that align with national specificities.

- Developing a suitable ecosystem for the emergence of startups, especially those focused on knowledge, technology, and innovation.

- Implementing and enhancing electronic payment services and digital financial transactions.

- Launching mobile payment services using Quick Response (QR) codes in late August 2020.

5.2. Digital Financing Tools and Means in Algeria

As information systems, payment methods, financial transactions, banking, and reforms in the banking sector have modernized, digital financing and its various tools have emerged in Algeria. In this context, we will explore the most important digital financing tools and examine the development of its activity in Algeria.

5.2.1. Digital Commerce: The volume of commerce depends on the interaction

between sellers and buyers. With the advent of the Fourth Industrial Revolution, digital commerce has appeared in Algeria, evolving as the Internet becomes a fundamental means of interaction. This evolution is reflected in the continuous increase in its value and the number of users. The following table illustrates this development

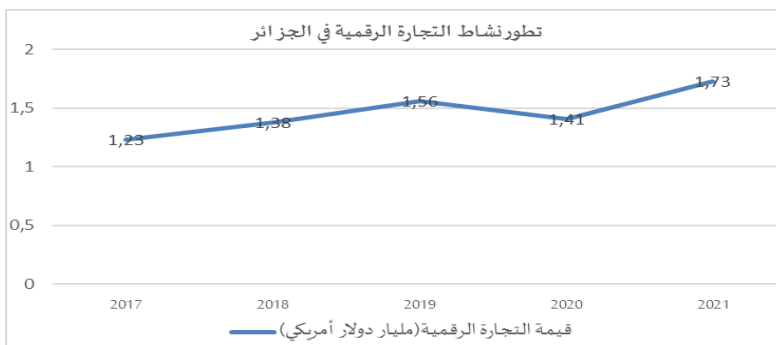
Table 4: Evolution of Digital Commerce Activity in Algeria during the Period 2017-2021

Year	Transaction Value by Sector (Billion USD)	Change in Transaction Value by Sector (%)	Average Transaction Value per User (Thousand USD)	Users by Category (Million Users)	Sector Penetration Rate (%)
2017	1.23	/	0.19	6.5	15.8
2018	1.38	12.7	0.17	8.0	19.0
2019	1.56	12.9	0.16	9.9	22.9
2020	1.41	-9.8	0.13	11.3	25.7
2021	1.73	22.6	0.14	12.7	28.5

Source: FinTech Report 2021.

The development of digital commerce activity in Algeria during the period 2017-2021 can be further illustrated through Figure 4.

Figure 4: Evolution of Digital Commerce Activity in Algeria during the Period 2017-2021



Source: Compiled by the researchers based on the data from Table 4.

From the figure, it is evident that digital commerce in Algeria has witnessed an increase in both its value and user base

from 2017 to 2021. In 2017, its estimated value was 1.23 billion USD, with a user base of 6.5 million. By 2018, the value

increased to 1.38 billion USD, showing a percentage change of 12.7% from the previous year, and the user base grew to 8 million. This upward trend continued until 2021, reaching its highest value of 1.73 billion USD, with a percentage change of 22.6% compared to the preceding year. The user base for the same year reached 12.7 million.

However, this modest increase can be attributed to Algeria's slow progress in this field, falling short of the desired level compared to Saudi Arabia. This can be linked to the inadequate telecommunications infrastructure, unequal opportunities for citizens, limited internet access in certain southern and

even northern regions, and the lack of trust in unknown sellers who are not physically present. Additionally, digital commerce has not deeply embedded itself in Algerian societal habits, as many individuals prefer physically examining, touching, and perhaps tasting goods and services before completing a transaction.

5.2.2. Digital Transfers

In an effort to reduce risks related to carrying and transferring physical currency, as well as to lower error costs and exchange processes, digital transfers have emerged and gained popularity in Algeria in recent years, as illustrated in the following table

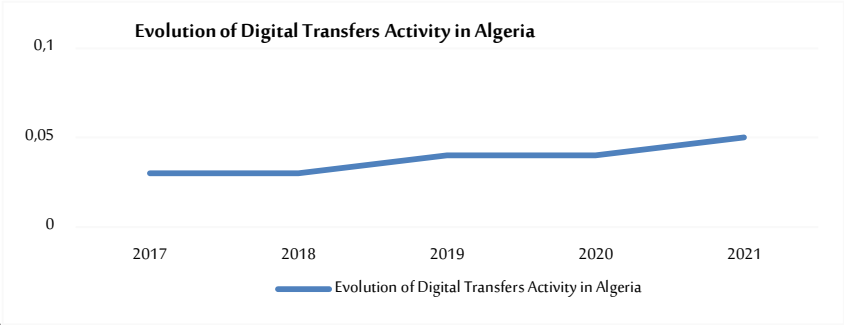
Table 5: Evolution of Digital Transfers Activity in Algeria (2017-2021)

Year	Transaction Value by Sector (Billion USD)	Change in Transaction Value by Sector (%)	Average Transaction Value per User (Thousand USD)
2017	0.03	/	4.34
2018	0.03	0.00	4.24
2019	0.04	22.9	4.15
2020	0.04	5.1	3.54
2021	0.05	16.4	3.43

Source: FinTech Report 2021.

The evolution of digital transfers activity in Algeria (2017-2021) can be illustrated in the following figure:

Figure 5: Evolution of Digital Transfers Activity in Algeria (2017-2021)



Source: Compiled by the researchers based on data from Table 5.

Observing the previous figure, digital transfers in Algeria experienced modest growth throughout the study period. In 2017, it recorded a value of 0.03 billion US dollars and remained stable in the following year. By 2019, there was a slight increase of 22.9%, reaching a value of 0.04 billion US dollars. The upward trend continued until 2021, registering 0.05 billion US dollars with a change of 16.4%. The reason behind this is that despite the Algerian efforts in rehabilitating its banking system, particularly in digital financial transfers, it still falls short of its targets. Several obstacles hinder its growth, such as the absence of banking culture, especially regarding digital transfers, difficulties in widespread and affordable internet access and digital technologies, unclear legal and legislative frameworks regulating digital transfers, leading to user apprehensions

and a lack of trust. Additionally, the scarcity of experts and professionals in the technology field, coupled with the limited interest in digital financial services in Algeria, contributes to its lag compared to Arab countries, especially Saudi Arabia.

5..2.3. E-commerce Points of Sale (ePOS)

Electronic points of sale emerged to address the liquidity problem and eliminate the cost and inconvenience of traveling to post offices or bank branches to withdraw funds for purchases. This feature has attracted more users, especially among merchants and retail agencies, contributing to the establishment and enhancement of digital financing. These ePOS continue to undergo continuous development year after year, as illustrated in the following table

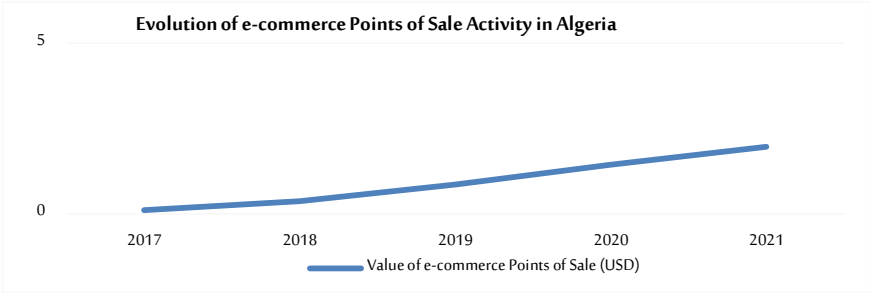
Table 6: Evolution of E-commerce Points of Sale Activity in Algeria (2017-2021)

Year	Transaction Value by Sector (Billion USD)	Change in Transaction Value by Sector (%)	Average Transaction Value per User (Thousand USD)	Users by Category (Million Users)	Sector Penetration Rate (%)
2017	0.10	/	0.09	1.1	2.7
2018	0.36	260	0.13	2.7	6.5
2019	0.85	136.2	0.17	4.9	11.4
2020	1.44	68.3	0.21	7.0	15.9
2021	1.96	36.4	0.23	8.4	18.9

Source: FinTech Report 2021 .

This evolution can be illustrated through the following figure:

Figure 6: Evolution of E-commerce Points of Sale Activity in Algeria (2017-2021)



Source: Prepared by the researchers based on data from Table 6.

We observe that the activity of e-commerce points of sale in Algeria has experienced relative development since 2017. In that year, it recorded a value of 0.10 billion US dollars with 1.1 million users. The value increased significantly in the following year, by 260%, reaching 0.36 billion US dollars with 2.7 million users. The activity of e-commerce points of sale continued to evolve, reaching a value of 1.96 billion US dollars in 2021, with a change rate of 36.4%. The number of users for the same year was estimated at 8.4 million. Despite this relative progress, it remains below the level compared to Saudi Arabia. This is attributed to a lack of trust, insufficient awareness, and motivation among citizens regarding the importance of electronic usage. The situation is also hindered by the reluctance in investments in this sector, slow internet speed, and the absence of necessary protection for users of banking technologies. Additionally, inflexible laws, regulations, and regulatory frameworks that do not keep pace with current and expected technological

transformations contribute to the challenges.

5.3. Requirements for Activating Digital Finance in Algeria

After presenting the reality of digital finance in Algeria, it becomes clear that the measures announced and adopted by the Central Bank of Algeria are insufficient compared to the experience of the Kingdom of Saudi Arabia. To activate digital finance in Algeria, the following must be available: 2022، (بتصرف) الصفحات 18-22)

5.3.1Digital Infrastructure: Digital finance cannot be activated without developing the supporting infrastructure, including broadband fixed and mobile communication networks, high-speed internet networks based on optical fibers, and digital platforms for storing large databases. A reliable and efficient electrical network is also crucial. The irregularity of power supplies and the lack of reliability in the electricity network can lead to data loss due to the inability to connect to information centers. Comparing the digital infrastructure in Algeria with that of Saudi Arabia reveals that Algeria lacks sufficient digital infrastructure to fully activate digital

finance. Algeria has a vast network of fiber cables (connecting one network to another) extending over a distance of 75,000 km. If these infrastructures are connected to Sub-Saharan Africa and the submarine cables passing through the Mediterranean Sea, Algeria has the potential to change the geographical landscape of internet infrastructure globally. Therefore, enhancing digital infrastructure is one of the top priorities that must be met in the short term. Algeria should identify geographic digital gaps, enhance the quality of 4G, expand 5G networks, and use mobile internet to access all regions of the country, despite the vastness of its territory, which poses a significant challenge to the sector. Additionally, supporting the acquisition of digital tools is crucial.

5.3.2. Legal and Legislative Framework:

Digital finance requires the existence of supportive systems characterized by modernity, flexibility, and openness while considering the interests of various parties and national priorities. Algeria needs to leverage the Saudi experience in enacting laws and revising regulations governing digital finance. This involves regulating key aspects such as digital identity, digital signatures, data protection, information and data security, open data, and freedom of information. This should align with technological developments, establish mechanisms and executive programs to expedite the deployment of wired and wireless broadband services, and ensure the necessary infrastructure is in place. Developing strategic plans, policies, system projects, and regulations for the telecommunications and information

technology sector and digital transformation is crucial. Reviewing and updating the electronic transaction system in collaboration with both the public and private sectors is essential. Additionally, issuing guidelines for the use of digital authentication services for banking products and implementing them across all banks is necessary.

5.3.3. Digital Creativity and Innovation:

Innovation and creativity are requirements for digital finance by providing an efficient innovation system to access knowledge repositories, assimilate these innovations, adapt them to local needs, and create new technology. Arab countries have not achieved significant levels in this field, with Saudi Arabia ranking third in the Arab world with an innovation value of 49.20%. Algeria, at the bottom of the ranking, needs to establish national centers and entities in the field of information and communication technology, supported by material and moral resources, to develop the technological and scientific base, enhance the role of research and development in the country, launch digital initiatives, and create an open data platform to promote innovation and entrepreneurship.

5.3.4 Internet Accessibility: Enhancing digital finance requires expanding internet service coverage, as the ability to access the internet is a requirement for digital finance activation. There is a strong link between the spread of internet service and the possibility of activating digital finance. Internet usage rates and access in Arab countries remain below the global average despite efforts made. Therefore, Algeria should deploy the latest generation

communication networks, providing broad and high-speed connectivity, creating a genuine digital platform that allows for the full activation of digital finance. This enables adapting to modern financial payment methods, facilitating citizens' lives, and contributing to better tracking of financial transactions.

5.3.5. Financial Education: Financial education is considered a supportive element for digital finance in light of increased secure access to financial services by target groups. Our study of digital finance in Algeria reveals a delay in financial and digital literacy. Therefore, Algeria must intensify educational programs supported by a national strategy to increase awareness and financial literacy among all segments, especially youth, women, small and medium-sized enterprises, and micro-enterprises. This includes how to use technology and the internet, access financial services, and make digital payments via mobile phones. Empowering them to avoid risks associated with these transactions is crucial. Saudi Arabia has focused on this aspect to promote digital finance through initiatives such as the Digital Giving Initiative and the Think Tech initiative, among others, aiming to disseminate digital knowledge and enrich digital content on the internet.

5.3.6 Enhancing Cybersecurity:

Cybersecurity is an essential requirement for all countries, especially those increasingly incorporating technological, digital, and virtual dimensions into their affairs. Saudi Arabia stands out as a leading country in this field, holding the first regional and 13th global position in the Cybersecurity Index. Therefore,

Algeria should leverage Saudi Arabia's experience by adopting several measures to improve cybersecurity. This includes establishing high-level frameworks in this field, especially since Algeria has recently embraced digitization and e-government. Algeria should activate a firewall through electronic fingerprinting, electronic signatures, and reinforce password systems; technologies that enhance protection against hacking, fraud, and email forgery. Additionally, fostering a digital-savvy generation through quality education in electronic and cybersecurity is crucial for the upcoming generations. Algeria should also implement legal measures in this field and launch various regulatory guidelines. Collaborating with Chiron Technology Services, Algeria should release the third version of the specialized cybersecurity program "Secure 19," akin to Saudi Arabia's initiatives.

6. Conclusion

Through this study, aiming to comprehend the reality of digital finance in Algeria and identify the requirements for its activation based on Saudi Arabia's pioneering experience, several results have been obtained, summarized as follows:

- Digital finance is a form of financial innovation, representing operations securing funds differently from traditional methods. It relies primarily on technology, with key tools including ATMs, digital commerce, digital transfers, and electronic points of sale.
- Digital finance, supported by technology, provides innovative solutions that elevate operational efficiency rates and significantly

facilitate access processes. It reduces transaction times, increases speed, and is known for its security, resulting in more users gaining various products and services, especially among disadvantaged groups. Consequently, digital finance works towards achieving economic benefits.

- Saudi Arabia possesses a robust digital infrastructure, ranking second in the frequency spectrum allocation among G20 countries. The National Frequency Spectrum Plan, focusing on spectrum allocation priorities, redistribution, and allocation, contributed to Saudi Arabia achieving the fourth global position in deploying 5G technology. The country also experienced over a 100% increase in internet speed and improved quality and speed of mobile internet services.

- Digital finance in Algeria has not reached the desired level according to digital finance indicators, especially when compared to Saudi Arabia. Challenges include inflexible financial sectors, technological fragility in banking, weak technology control in the human resource sector, lack of modern technologies, and digital illiteracy among Algerian society.

- Despite efforts and existing infrastructure, such as optical fibers, submarine links, and mobile phones, Algeria's experience in digital finance remains modest compared to neighboring countries and notably Saudi Arabia, which has made significant strides in the field.

Henceforth, the following recommendations are suggested:

- The necessity of establishing clear strategies and action plans to achieve digital finance.

- Developing digital infrastructure, especially in the realm of information and communication technology.

- Fostering digital skills by adapting educational programs across various institutions, particularly in the utilization of technology and the internet. This includes accessing financial services, making digital payments via mobile phones, and empowering individuals to avoid risks associated with these transactions.

- Providing a feasible and appropriate legal and regulatory framework for embracing digital finance and offering digital financial services.

- Enhancing cybersecurity through the creation of digital systems to protect customer data, characterized by efficiency and continuous, precise monitoring. This aims to mitigate risks of hacking, fraud, and embezzlement.

- Algeria can benefit from Saudi Arabia's experience in improving digital finance indicators by creating a conducive financial environment. This involves attracting technology companies to invest in this field and elevating the performance of the banking and financial sector.

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