

COVID-19 and challenges of the Fintech industry: A state of the art and outlooks on the North African region.

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Submitted: 13/09/2021

Accepted: 19/10/2021

Published: 30/12/2021

Abstract:

This paper aims to investigate and give some element of answers to what extent the Financial Technology (FinTech) industry could be such an opportunity to mitigate the financial issues faced during the COVID-19 outbreak, particularly, in the North African countries. In the aim to present a state of the art, prospective discussion, and outlook reading; this paper is established using a descriptive and deductive approach and based on recent data and updated research findings, global institutions blogs, reports, publications, evidence, policies, and statistics. Some highlights and focuses are given for leading countries in the region like Egypt, Morocco, and Tunisia, with brief attention to the Algerian case. Our findings show that banking institutions are the major access to financial resources and critical financial services for many customers and users in the region. Therefore, FinTech solutions are not yet matured and undefined in the future but are necessary for unbanked people. Further reforms in terms of regulations, technology adoption, cost use and access are still required.

Keywords: COVID-19, FinTech industry, Financial inclusion, Digital Financial Services (DFS), North African countries.

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Introduction:

On 11 March 2020, the World Health Organization (WHO) has declared the “COVID-19 virus” as a worldwide pandemic. Since that, the spread of COVID-19 is becoming a global economic challenge instead of just a public health issue. Thus, many countries had imposed a complete or partial economic lockdown measure (firms are closed, workers stopped, and unemployed or resigned, ...etc.) with the growing number of reported cases and confirmed deaths.

All the countries affected continue to undergo an economic crisis that has been exacerbated by the ongoing fall in oil prices in some of them. This situation leads to financial incapacity and cuts of revenues for many people worldwide. As a result, there were significant impacts of the COVID-19 pandemic on the African economies, in which they have engendered major losses, impacted by those measures, mostly in terms of lost production and trade both within countries as well as between them (Gondwe, 2020).

Financial services are currently provided in a wide range via cryptography, payment applications, robots advisors (algorithms and surveys used to allow portfolios to be built), mobile wallets, and crowdfunding (through Web 2.0 technologies). Therefore, Digital Financial Services (DFS) have a ‘significant potential to provide a range of affordable, convenient and secure banking services to poor people in developing countries.’ (Makina, 2019).

The Financial Technology industry, known as “FinTech”; had recognized rapid growth and had also attained initial mass adoption. According to Ernst & Young (2019) and Pwc (2017) reports revealed that FinTech in nowadays is becoming a host of multiple companies that globally offer and operate wide-ranging of financial services. Moreover, according to Financial Sector Deepening Africa (FSDA), by 2022, the economic output related to FinTech is expected to increase by at least US\$40 billion annually to US\$150 billion. Also, it is revealed that around three million people work, either directly or indirectly, in the FinTech industry (Clyde, 2019).

The COVID-19 crisis stretches the chance for further expansion of FinTech's role in financial inclusion in developing economies. FinTech is contributing not only to sustainable development but also to the economic stability of poor and Small & Medium Enterprises (SMEs) in times of economic disruption by extending financial services into the disadvantaged communities. The lockdown measures triggered a substantial decline in currency and cash transfers; meanwhile, customers

prefer contact-free or touch-free payments. Therefore, FinTech firms are among those who make technology easy to satisfy the specifications of this new consumer comportment. Hence, the Peking University Digital Finance Research Center argued that: *“Every 1% increase in digital lending is estimated to reduce 2.57% negative impact of COVID-19 on the real economy.”*

As well, FinTech provides innovative financial solutions valuable during pandemics to lower-income groups. For instance, they have helped the African SMEs to address several obstacles, primarily through the facilitation of digital transactions and quick and easy access to credit (OBG, 2020a, 2020b). Furthermore, FinTech, in particular, will open new financial outlets effectively for distressed banks and other classic financial institutions which are underserved.

From above, this paper attempt to understand and give a state of the art, prospective discussion, and perspective reading to the impacts of COVID-19 on the North African economies and the role of the FinTech industry to mitigate the crisis. Further, the paper tried to present evidences, policies, studies results, challenges and difficulties, with such analysis and comparison among African countries in general, and the North African ones in particular. However, some highlights and focuses are given for such cases of leading countries in the region like Egypt, Morocco, and Tunisia.

In another word, this paper aimed, essentially, to investigate and try to give some element of answers to what extent the FinTech industry could be such an opportunity to mitigate the financial issues faced during the COVID-19 outbreak, particularly, in the North African countries. Finally, it exposes the outlooks of the future challenges of this revolution by focusing on the main following questions: 1) Are North African economies enough ready and organized toward the adoption and widespread of FinTech? 2) How do significantly consider the role of FinTech technologies during the COVID-19? 3) What would be the risks and expected benefits on the development of North African economies through the adoption of FinTech amid and post-COVID-19?

In this context, this research established two main hypotheses. The first one claims the readiness and potentials of North African countries toward the implementation of the FinTech industry. The second considers the social distance and confinement measures as the key reasons for the use and adoption of FinTech solutions in which to mitigate the pandemic issues.

This paper started with an introduction and ended with a conclusion and recommendations, in which it is structured in seven (07) sections that would present a consecutive analysis related to the main issue as follows: *Sec.1.* Method & data, *Sec.2.* Literature review and study context, *Sec.3.* COVID-19 impacts on the North African region: a synopsis overview. *Sec.4.* FinTech industry: Backgrounds, facts, limits, and perspectives. *Sec.5.* Opportunities & limits of FinTech adoption during the COVID-19. *Sec.6.* A swift focus on the Algerian case. *Sec.7.* Discussion and analysis.

Method & data

Through a descriptive method, this research paper presents an analysis and critical discussions, over a deep reading and compared evidences, that are based on recent data and updated research findings and inspired talks by research works, global institutions blogs and expert forums, also based on reports, studies, and statistics established and published by Think tanks, institutions, and governments.

A deductive approach is also used to observe, extract and comments on the retrieved data and findings. This approach is more relevant to design and build a number of compared results on the region's countries.

Literature review & study context

Based on data on mobile applications retrieved from 71 countries during the COVID-19 lockdown worldwide; Fu & Mishra (2020) exposed that COVID-19 spreads and associated government lockdowns led to a rise in the relative daily download rate between 29.2 and 32.8 per cent during the pandemic peak. This evidence replicates the acceleration of digital transformation in the financial sector through the adoption of FinTech. However, businesses that had already an existing digital payment infrastructure are better prepared and ready to deal with the pandemic restraints. Tut (2020) disclosed that the COVID-19 pandemic has improved FinTech's payment system acceptance. Banking transfers have increased by approximately 54%, mobile agents by 19.56% and mobile bank accounts by approximately 14.5%. The use of all electronic payment cards decreased significantly during the pandemic.

Regarding the impact of COVID-19 on FinTech startups in 169 countries worldwide; CCAF, World Bank, & World Economic Forum (2020)¹ unveiled that FinTech markets, in emerging and developing countries with more stringent COVID-19 lockdown measures, reported

¹ **CCAF:** *Cambridge Centre for Alternative Finance.* (University of Cambridge Judge Business School).

higher growth in transaction volume. However, Salami (2020) confirmed that the positive contribution made by the FinTech startups in Africa will greatly encourage the recovery process in post-crisis situations, nonetheless, it will rely on and depend on several factors in their contribution.

According to Abu Daqar, Constantinovits, Arqawi, & Daragmeh (2021) the most important instruments of Fintech are contactless payment mechanisms which can help prevent the possibility of a spread of COVID-19. Besides, consumers are more pushed to the use of digital payment since the increase of online shopping.

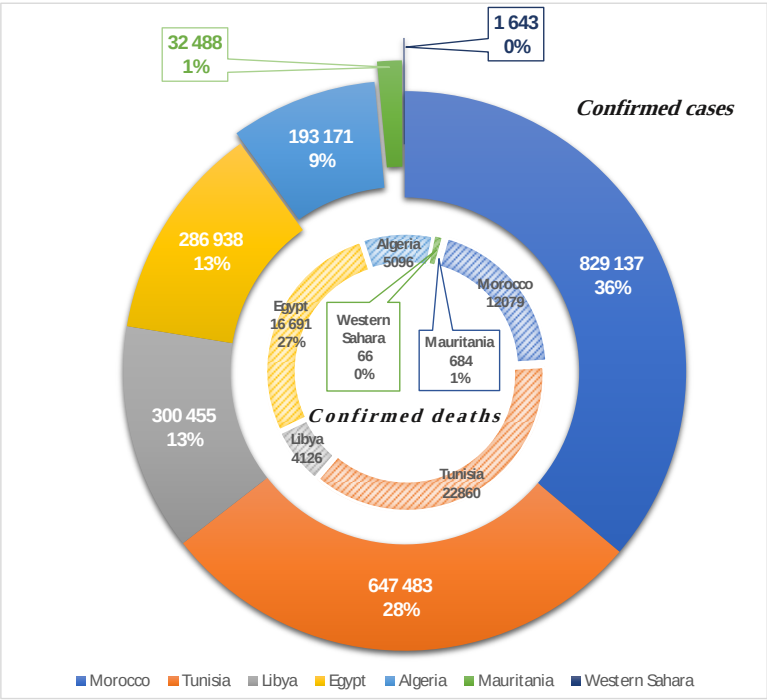
In fact, digital transformation only became a modern standard with the COVID-19 pandemic, a change that has now been seen in emerging economies. Meanwhile, financial institutions create and collaborate with tech companies to include and accelerate the digital transformation contrasted with in-house solutions (Maddyness, 2020).

During the COVID-19, Ozili, (2020) considered that financial inclusion is an important instrument for developing finances and funding for disabled persons and households.

COVID-19 impacts on the North African region: a synopsis overview

COVID-19 poses a significant danger to most African countries, and apparently to the North African region. For instance, the Government of South Africa was commended for its early and effective lockdown, however, in June 2020, loosening controls were followed by an increase in infections. By the 25th of August 2021, the total number of confirmed cases, deaths, and recoveries in Africa reached consecutively 7,620,106; 191,818; and 6,739,014 (Africa CDC, 2021). Accordingly, North African countries only represent 11,95% of confirmed cases and 32,11% of deaths. Figure. 1 shows the cumulative confirmed cases and cumulative deaths in the North African countries.

Figure n°01: Total confirmed cases and deaths of COVID-19 in the North African countries (over 25 August 2021)



Source: Established by the author based on data retrieved from (Africa CDC, 2021).

COVID-19 would trigger North Africa's economic recession primarily through the effects of lockdown policies, declining foreign demand and declining global commodity prices (oil and gas). Furthermore, a survey conducted, in December 2020, estimated the GDP at minus 1.1% for the North African countries compared to 2.3% in July 2020. The slowdown, however, remained important, although there were slightly sharper declines in other regions on the African continent (Statista, 2021).

Regarding the structure of North African economies, in accordance with UNECA (2020), the COVID-19 impacts can be understood through a dual perspective. The first channel is reducing economic development as a direct result of countries lockdown; the second one is an indirect impact by a global lockdown effect on people trading activities and movement. In fact, this situation obliged a number of companies to either discontinue their work and operations or substantially reduce them.

Though that the COVID-19 crisis is likely to persist for some time, and the risk of infection widespread is serious, also, this crisis would

have diverse impacts on health, social, and economic levels. To restore the economy in a balanced manner, African countries in general, and North African in particular, must find strategic ways of bringing main sectors into action while maintaining healthy working conditions and governments would then need to create the capacity to switch between reopening and limiting local economies (McKinsey & Company, 2020).

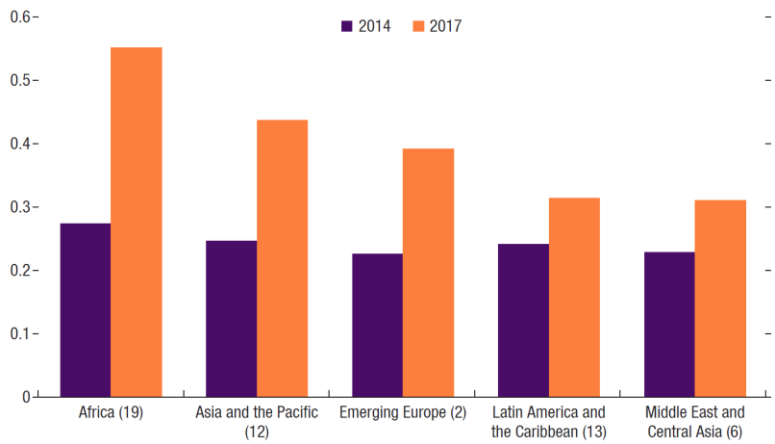
FinTech industry: Backgrounds, facts, limits, and perspectives

“FinTech” is a concept composed of “*Finance*” and “*Technology*”. It has a long background history of finance and contemporized to a new attribute caused by the recent market and technology revolution. FinTech does not have a unique definition yet, while institutions and authors provided some². Gimpel et al. (2018) introduced the following definition: “*characterizes the usage of digital technologies such as the Internet, mobile computing, and data analytics to enable, innovate, or disrupt financial services*”. Moreover, the International Organisation of Securities Commissions (2017, p. 4) is recognized as: “*The term Financial Technologies or “FinTech” is used to describe a variety of innovative business models and emerging technologies that have the potential to transform the financial services industry*”.

Thoroughly, the technology revolution has deeply disrupted financial services. Consequently, it is strengthening the spread of financial inclusion, particularly, to the poor and low-income countries, and therefore, FinTech is currently considered as one of the leading and driving factors to its realization (see figure.2). Further, financial inclusion is one of the fields of possible transitions associated with FinTech solutions. It will help solve ongoing financial problems, such as transaction costs, unbanked people, consumer identification (ID verification), and information asymmetry. For instance, as a catalyst for greater financial inclusion, Africa has become the spearhead in mobile money, although, in other facets in FinTech, Asia has made substantial strides (IMF & World Bank, 2019; Zhang, 2019). In overall, FinTech's market portfolio began with electronic payments, cash deposits, peer-to-peer lending, crowdfunding, and also expanded across the modern field of robotics and Artificial Intelligence in finance, cryptocurrency, and blockchain.

² For further understanding and profound definitions, see : Knewton & Rosenbaum (2020)

Figure n°2: Measurement of digital financial inclusion (enabled/driven by FinTech)

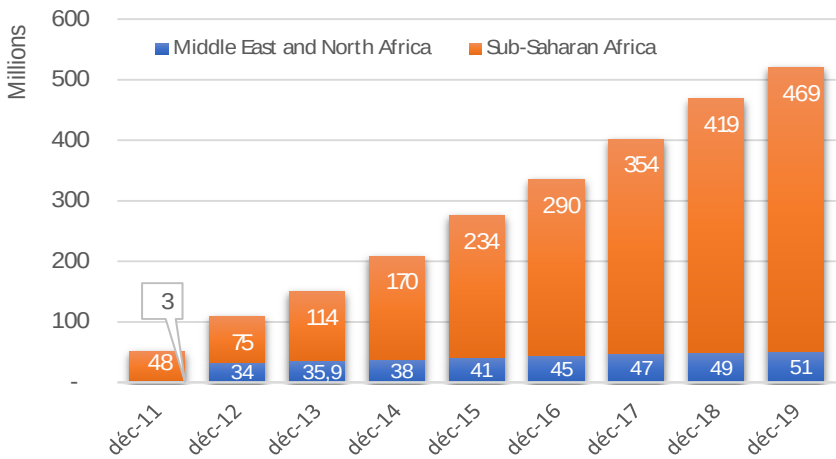


Source: IMF calculations cited by Sahay et al. (2020)

1. African level

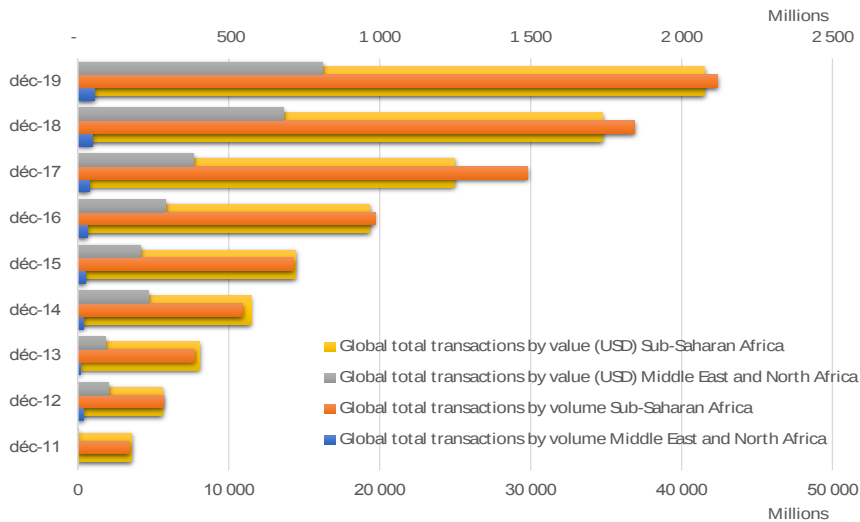
Sub-Saharan Africa (SSA) has proved to be a pioneer in mobile money with a mobile phone account for 21 % of the adult population. SSA has also shown that these accounts can be used for more specialized financial services such as wireless loans and insurance (Tidjani, 2020). In contrast, the Middle East & North African (MENA) region is still registering low rates from 2011 to 2019 in total registered mobile accounts and total transactions (see figures. 3&4).

Figure n°3: Total registered mobile accounts in MENA & SSA regions (Dec 2011- Dec 2019)



Source: Inspired and established by the author based on datasets retrieved from GSMA (2020)

Figure n°4: Total transactions (by volume & value “USD”) in MENA & SSA regions (Dec 2011- Dec 2019)



Source: Ibidem.

In fact, FinTech has set up a strong market position and many banks start to compete actively for the customer of mobile banking. Although some banks have opted to "go it alone," others are developing alliances to introduce more quickly on the market (Chironga, De Grandis, & Zouaoui, 2017).

2. North African level

In terms of digital investment, North Africa recorded the lowest distribution rate (25%) of the total number of deals and investment value among the MENA region. Whereas, Egypt is considered as one of the top countries that have a major investment value in the North African region (Christidis et al., 2018, p. 37). The communication infrastructure is relatively limited, although, North Africa is considered as the best-connected region with a high mobile phone penetration rate of 67% in 2018 and 83% for 4G network coverage in 2020 (see table 1). Furthermore, the region estimated around 82% of the population uses the phone regularly, US\$ 1944,50 million of E-commerce sales, and only 14 % of the population, who have access to finance, with a mobile money account (OECD, 2021).

Table n°1: Key indicators of mobile connectivity in North Africa (2019-2025)

Indicator		The penetration rate in 2019	Estimated penetration rate in 2025
Mobile subscriber penetration		70%	73%
Mobile internet users (Active)		51% (4.0 billion) in 2020	60% (5.0 billion)
Smartphone adoption		54%	75%
Technology Mix	2G	27%	7%
	3G	51%	36%
	4G	22%	51%
	5G	-	6%

Source: Established by the author based on data retrieved from (GSMA, 2020, 2021)

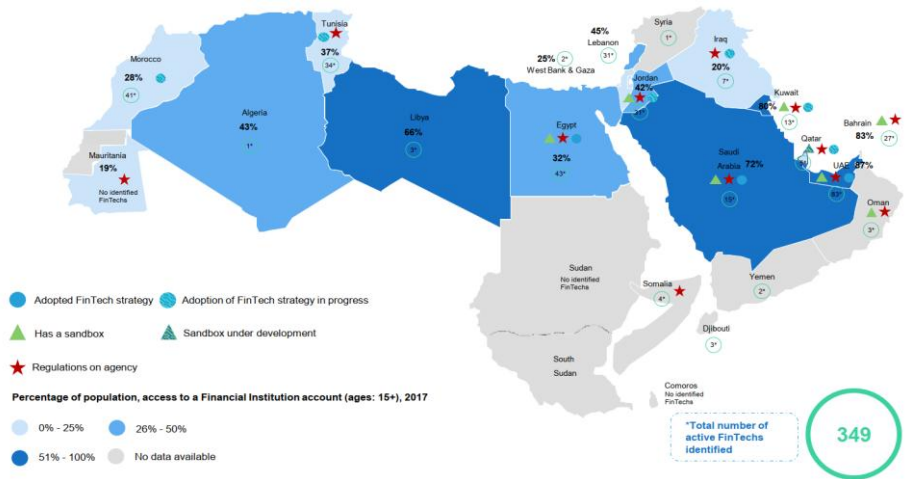
Regarding the FinTech development and its degree of maturity, CFC & Pwc (2021) suggested to group similar countries in three main regions/ecosystems as follow: *Africa’s “Leading” Fintech Ecosystems* in Anglophone Africa (e.g., Nigeria, Ghana, South Africa and Kenya), *“Promising” Fintech Ecosystems* in Francophone Africa (e. g., Senegal, Ivory Coast), and *Northern Africa’s “Emerging” Fintech Ecosystems* (e. g., Morocco, Tunisia).

Accordingly, the North African region is not yet matured in comparison to the SSA region. Nonetheless, three countries are recently starting leveraging the FinTech industry: Egypt, Morocco, and Tunisia. Although, a favorable ecosystem with strong government support, a relative high integrity of the private sector, and accepted levels of education; are leading these three countries to be the earliest FinTech startups booster in the region. Furthermore, in kind of a number of startups that raised over US\$ 100 thousand from 2011 to 2020, these countries have respectively registered a total of 92, 13, 13, 3 startups for Egypt, Morocco, Tunisia, and Algeria (OECD, 2021). Referring to E-commerce and digital services activities, the North African region has known a typical growing rate consecutively with 6,2% and 34,5% in 2010 and 2017. Whereas, it is still considered as low level in comparison to other regions and continents. This is also corresponding with a lack of active startups boost and creation into the financial services (FinTech) sector.

A recent study conducted by CGAP (2020) has identified a total of 349 active Fintechs solutions in the Arab region, while, North African region represents around 35%. Therefore, Morocco, Egypt, and Tunisia are respectively the most Fintechs host countries in the region, with a primary focus on payments and remittances category. Meanwhile, policymakers are making decisions in which they establish policies,

regulations, and strategies, which they are conducting to improve and empower the business climate and motivate initiatives that help to more and more involve and support the adoption of financial technology services and solutions (see figure.5).

Figure n°5: Regulations, supports, and strategies of FinTech adoption in the North African region.



Source: (CGAP, 2020, p. 48).

2.1. Evidences and challenges

FinTech regulations and strategies have been already implemented in Egypt, then, they have been solely undertaken in progress in different levels, particularly, in Morocco and Tunisia. Numerous measures and actions have been introduced by some governments to fostering the establishment and implication of FinTech policies and strategies. For instance, Morocco has adopted a national financial inclusion strategy in which it works to reduce access disparities and financial services penetration. It has also promoted the adoption and usage of mobile payment by the introduction of some fiscal incentives. Besides, intending to reduce the cash circulation in markets; the Central Bank of Tunisia has exposed his recent scheme named the “De-cashing Project”. Furthermore, it launched a strategy plan (2019-2021) to support innovation and competitiveness in financial technology services and solutions (CGAP, 2020). Table.2 below shows a comparison among the top three countries of the North African region regarding the development stages achievements of the FinTech industry.

Table n°2: Requirements and achievements to the FinTech industry (Egypt, Morocco, and Tunisia)

Egypt	Morocco	Tunisia
• Mobile payment regulations have been updated, in which to provide legal clarity for nonbank payment service providers. For instance: Egypt’s base of giant consumers is used to become an attractive market for fintech investments. • The government is encouraging and providing incentives to digital payments (m-banking & e-wallets) by establishing a collaboration with banks and non-bank payments players, in which to restructure transaction fees and transaction limits. • In June 2019, The Central Bank of Egypt has established a sandbox, to ensure financial inclusion, monitor the regulatory dynamics of fintech firms, improve SME access to banking and financial services, and support the transition to a digital economy that promotes de-cashing. • While the FinTech industry is too modest, but it is growing rapidly owing to government support and market dynamics.	• The uptake of digital financial services as the key drivers of fintech growth in Morocco is encouraged by several factors: a large population of unbanked, high mobile coverage, an abundant supply of talent, and a sum of other government initiatives. • E-commerce is experiencing solid growth, driving with it online transactions. • Upgrading the infrastructure such as the Electronic National Identity Card (CNIE), and regulatory changes in banking laws, that are also contributing to the growth of the fintech industry. • Morocco is the only African country to reflect on the adoption of a law aimed at facilitating "crowdfunding". • More than 40 fintech solutions in Morocco are mainly active on: payment, remittance, and point-of-sale (POS) systems.	• Tunisian startups are playing an important role in emerging and revolutionizing technology by offering innovative solutions to banking products and services. • Tunisia has made it one of the top five MENA countries, with a particularly remarkable size in the field of digital investment. • In 2020, as Fintech market potential (indicated by smartphones adoption rate), Tunisia ranked in the third, after Morocco & Egypt, with 27% among the North African countries. • A regulatory sandbox, which allows fintech firms to test their innovative solutions on a small scale with volunteer customers has just been launched by the Central Bank of Tunisia.

Source: Established by the author based on : (AUC/OECD, 2021b; Fintechnews Middle East, 2021; Agur et al., 2020; Feller et al., 2017; IMF & World Bank, 2019; Jurd De Girancourt et al., 2020; Christidis et al., 2018; Zone, 2017).

2.2. Limits and constraints

On contrary, several obstacles have commonly been observed influencing the North African region, including: lack of confidence, reluctance to change, too tight laws or obsolete rules (particularly related to the crowdfunding and blockchain legislation) (Feller et al., 2017). In another word, regulatory and infrastructure gaps, and lack of trust are

serious barriers that influencing digital transformation and digital financial access. Also, data and privacy security are identified as obstacles, in which, reducing the demand for DFS in the region (see table 3).

Table n°3: Limits and constraints to the FinTech industry (Egypt, Morocco, and Tunisia)

Egypt	Morocco	Tunisia
• Structural gaps are mostly seeming, notably: gender, income, digital infrastructures, prudential regulations (<i>mobile money, cryptocurrencies, outsourcing</i>), consumer protection, cybersecurity, supervision, cross-sector and cross-border collaboration. • An economy is mostly based on cash transactions and informal activities.	• Moroccan market has been underserved. With their regulatory reforms, political stability and largely unbanked populations. • Threatening the competitiveness of companies as well as the whole economy, because most local talent and skilled graduates are moving abroad. • Numerous innovations have recognized such limited progress because of the shrinkage of regulatory flexibility.	• Due to certain constraints in contacting a physical bank, about 64% of individuals are financially excluded or under-served • In addition to the regulatory reforms, political stability and largely unbanked populations; the Tunisian market has already been underserved. • Tunisian market is too heavily regulated which can slow Fintechs down.

Source: Established by the author based on : (Fintechnews Middle East, 2021; Agur et al., 2020; Jurd De Girancourt et al., 2020; OBG, 2020a; IMF & World Bank, 2019; Christidis et al., 2018; Feller et al., 2017; Zone, 2017).

Manifestly, most of these countries are coming across with common limits, in particular: **consumer mistrust** (toward governments, banks, institutions, data privacy, and weak consumer protection frameworks), **lack of perceived value** (low consumer awareness, financial literacy, resistance to formal DFS channels, and poverty) (Riley, Pamela, Romorini, Golub, & Stokes, 2020).

In 2018, Morocco ranked in 77th place, followed by Egypt in 80th, Tunisia in 84th, and Algeria in 92nd, then Mauritania in 114th; although, they were mostly low ranked in accordance to the Enabling Digitalization Index (EDI)³ (AUC/OECD, 2021b, p. 201).

Overall, North African countries must continue to construct an efficient infrastructure, develop the human capital needed, deregulate a

³ The Euler Hermes Enabling Digitalization Index (EDI) measures the ability – and agility – of countries to help digital companies thrive and traditional businesses harness the digital dividend.

digital environment and increase their capacity to innovate with the aim to fully realize their digital potentials.

Opportunities & limits of FinTech adoption during the COVID-19

1. FinTech industry challenges against COVID-19

The COVID-19 crises enforce the FinTech industry to float among other technologies, particularly, in developing and low-developed countries. Furthermore, the precautionary measures apprehended against COVID-19 by almost all countries (lockdown, social distance, ...etc.) are given much more advantages and positive impressions to the adoption of FinTech technologies amid and post COVID-19 crisis, particularly, in the African continent.

According to Sahay et al. (2020), a study conducted from 2014 to 2017 on 52 countries (Emerging Markets and Developing Economies “EMDEs”) found that digital finance or FinTech is: *i*) increased, especially in Africa and Asia, and even where conventional financial inclusion was delaying or declining; *ii*) considering that digital payments are substantially and positively linked to GDP growth. FinTech may also play a major role in mitigating the COVID-19 economic effect on development; *iii*) leading to the closure of gender disparities in financial inclusion in most countries, but they may evolve in the post-COVID-19 period. Further then, FinTech is capable of reducing costs, increasing speed, security and transparency, and enabling customized financial services for poorer individuals, which is considered of particular value amid the COVID-19 crisis.

Particular regard to the North African region, the COVID-19 has accelerated the digital transformation to progressive stages in this region. One of the main policy actions recommended by UNECA (2020) to mitigate against the pandemic is to enable micro-finance opportunities and making digital banking and similar services more accessible to the poor by promoting the self-employment mechanism. Table 4 summarizes measures, challenges, and actions taken in Egypt and Morocco against COVID-19 in which may increase the DFS adoption level in general and Fintech solutions in particular.

Table n°4: COVID-19 and Fintech challenges in the region.

Country	Challenges and actions
Egypt	• As part of its response to COVID-19, the Central Bank of Egypt (CBE) has considerably increased the transaction limitations for mobile financial services, also, some other banks have been instructed by the CBE to cancel fees on transfers and e-payments. Therefore, digital payment instruments, such as mobile-enabled financial services and cards, will be more convenient to use. • In January 2020, the e-KYC (Know-Your-Customer) solution started working to let customers open bank accounts electronically and make at ease access to mobile payments. • In 2021, a US\$ 50 to US\$100 million Fintech investment fund has been launched. • Digital and electronic solutions developed by the largest banks in the local market of Egypt, in particular: e-wallets, QR Code and contactless payment solutions by card and prepaid electronic bracelets or “Wearable prepaid payment wristbands”.
Morocco	• Increased partnerships with Fintech; • Developing open banking to improve the customer experience and create value; • Optimizing costs and customizing financial products and services.

Source: Established by the author based on (Abdel Wahab, 2021; Boakye-Adjei, 2020; Jurd De Girancourt et al., 2020; MeilleureBanque.com, 2020)

Among overall countries in the North African region, Egypt and Morocco are witnessing the most advanced stages for the development of the Fintech industry, also, accelerated by the effect of the pandemic. Yet, Algeria, Tunisia, and Mauritania are still directing the development of traditional banking and insurance products and services during the COVID-19.

Moreover, the COVID-19 crisis is being a factor to boost or push many startups and tech companies to make initiatives and innovative solutions like mobile applications and platforms to mitigate the pandemic impacts. In Morocco, for instance, a digital platform has been launched by *Atlanta Insurance*; which connects volunteers who offer psychological counselling, elder-care, and other support to its clients. Besides, in Egypt, the distribution of goods to informal retailers are handling by *MaxAB*. This later is seeking to manage operating expenditures and to limit the risk of infection at crowded wholesale offline markets (Benjamin, Bishop, & Lawrence, 2021).

A recent report published by Deloitte (2020), manifested such differences between the North African region and Sub-Saharan African in terms of COVID-19 measures, DFS adoption level, and mobile services infrastructure, ... etc. Whereas a significant part of the African

population is banked or hold mobile money accounts, the North African countries are distinguished with a high rate of banking than the SSA region. In fact, one in every two North Africans has a bank account, compared to one in five in West and Central Africa.

Many African countries are still adopting and using fiat money systems. Therefore, COVID-19 measures not only played a key role to mitigate the crisis, but it also considered as an opportunity to sustainably develop and accelerate electronic and mobile money adoption. The North African governments are perseveringly operating on the transformation of maximum fiat money into electronic. In order to dematerialize, as much as possible, the cash, they are adopting two types of measures: economic incentives for the actors to use these solutions, and legal obligations, when the economic incentives are not sufficient.

Furthermore, rendering to Deloitte (2020), electronic money is very little used in the North African region, while to promote its adoption level, the creation of aggregators (collectors) shall primarily be necessary as a unique solution. These aggregators allow certain credibility for users through a national initiative also approved by mobile operators, banks, ...etc. However, massive adoption of electronic money by different government institutions (through financial and social transactions, partial salary payments, ... etc.) could be an incentive aspect, in which, to anchor the mobile payment ecosystem.

2. FinTech's limits and risks amid and post-COVID-19

In the time of crisis, there are many threats related to FinTech technologies are also increased. Examples include cyber-attack risks, money laundering, terrorist funding, data security, and customer protection challenges.

The African region has recorded such variances among countries during the outbreak of the COVID-19 crisis. Thus, the FinTech sector has also declined in many countries because of several reasons that are mainly regarded to the regulatory, also, to vulnerable, insecure, and incapability infrastructures. According to Agur et al. (2020), an immediate change to DFS could initially lead to worse income and gender disparity and worsen the rural-urban and young-age gap in Asia and Sub-Saharan Africa. Further, DFS could even become more likely to be vulnerable to:

- i) A missing regulatory framework for FinTech investments and deals that depends from one country to another;
- ii) Data access and privacy disclosures;
- iii) Operational threats (limitations in system capability and the failure of key personnel);
- iv) Cyber threats, digital fraud and scams,

lack of trust and low availability of FinTech technologies; v) Electronic transactions cost (the high cost of mobile transfers).

While North Africa is accounting more than a third (~39 million) of new mobile internet users (total of 93 million) in the MENA region from 2019 to 2025, nearly 350 million people (in MENA) still unable to connect to mobile internet; leading to a digital gap highlighted by the impact of COVID-19. Further, for many people with low knowledge levels and a lack of awareness of what a mobile money account is and its potential benefits, mobile money's influence will remain restricted (GSMA, 2020).

Either the three leading countries (Egypt, Morocco, and Tunisia) in the region have relatively identified the availability of capacities, in terms of infrastructure, that allowing financial technology innovation, yet, mobile payment mutations and traditional banking mutations are typically not interoperable, which ultimately limits the pool of potential customers and adoption opportunities (CGAP, 2020, p. 56).

In terms of regulation, capital investment and talents; stakeholders consider a lack of regulation as limiting, rather than as appealing. As a result, many FinTech solutions (such as mobile wallets) have been guided by new rules, while others, such as crowdfunding, haven't. Besides, limited transparency on license regulation slows down Fintechs in their early launching (CGAP, 2020). However, the COVID-19 crisis has given regulatory reform new impetus in areas where simplifying and digitizing KYC processes had stagnated (Andersson-Manjang & Naghavi, 2021).

Concerning the capital investment, while the three countries are experiencing a shortage in their early growth, and similarly, some advanced Fintechs are unready for an extended or large investment; the COVID-19 crisis may give an opportunity to early Fintech startups to keep soaring and boosting their growth.

Regarding the talents, even they attained such reputational and excellent universities and institutes; it is rare for graduates to have both business understanding and technical abilities. In addition, educated and highly skilled personnel typically prefer employment security with high salaries rather than entrepreneurship. However, the pandemic crisis may lead some talents to introduce and exploit their skills and competencies through virtual and in distance work meetings.

A swift focus on the Algerian case

According to (Nasri, 2021), the Minister Delegate to the Prime Minister in charge of the knowledge economy and Startups has declared

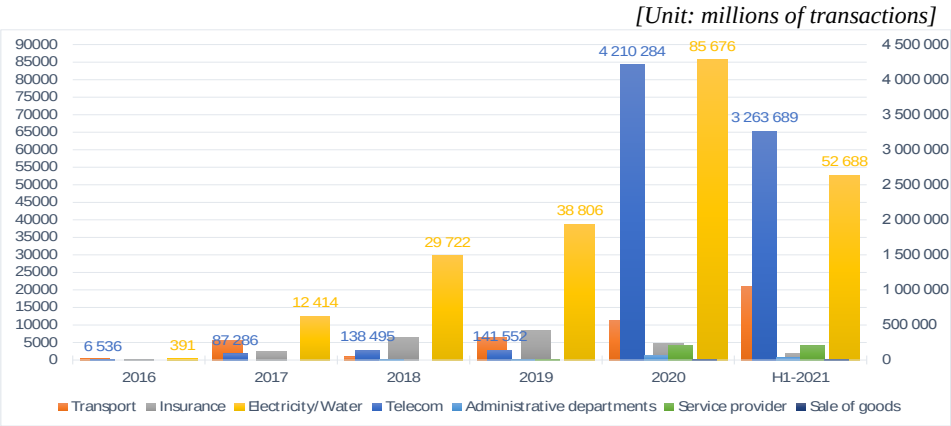
that: *“Start-ups can be successful in Algeria. Today, the modern economy relies on young innovative companies which have the capacity to evolve rapidly in various fields, notably in the financial sector”*. Therefore, a very positive and stimulus step have been recently taken by the Algerian Government through the created and wired SMEs and startup business ecosystem. As a result, a regulatory framework (executive decree n° 20-254 of September 15, 2020, published in the official journal n°51 of September 21, 2020) has been established to stimulate, promote and boost a favorable ecosystem for the establishment and development of startups in high skilled and advanced technologies. Hence, the decree underlines that a natural person or a group of natural persons can claim, through a national committee, the “Innovative project” label, for any project relating to innovation (JORADP, 2020, p. 11). Besides, according to APS (2020) and Kaouane (2020), new measures are established by the 2020 Finance Law in the form of tax incentives for the benefit of startups that are activated, particularly, in innovation and new technologies. Accordingly, a fund dedicated to the financing of these startups was officially created on October 3, 2020.

Today, the usage of digital payments in Algeria is still relatively low, even though mobile broadband coverage is above the MENA average. In fact, only 16% of Algerian adults compared to 23%, and 11% of Algerian women compared to 18% are using digital payments across the MENA region. Accordingly, 36% of adults and 32% of women in the EMDEs region. In-depth, 57% of adults and 71% of women are still lacking access to the most basic transaction accounts, which would allow them to send and receive money more safely and effectively. Hence, for Algerians who are less familiar with the financial industry, easier access to digital payments would provide a door to DFS (Delort & Poupaert, 2021).

Nevertheless, the DFS is getting evolved significantly, particularly, because of the impacts of lockdown and social distance measures imposed by the COVID-19. According to GIE (2021), currently, 105 web merchants are subscribers to the interbank card internet payment system. Since the launch of online payment, the total number of transactions is 8,460,613 in 2021. Recently, in addition to the CIB (Carte Inter-Bancaire) payment cards, the electronic payments system is strengthening with a significant evolution by the wired use of the payment card *“Edahabia”*. This later, launched in December 2016 by “Algérie Poste” offers its users several functionalities through the web-based services and “BaridiMob” mobile application. Namely, the

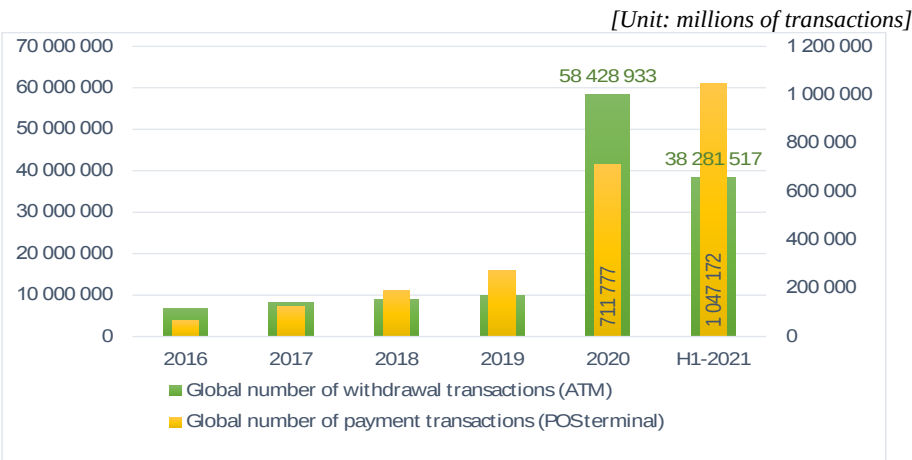
consultation of the account and card balance in a real-time, short statement for the last ten transactions carried out. Furthermore, the card allows more services like the transfer and receipt from and to another postal check account, the geolocation of Automated Teller Machines (ATMs). Rendering to Chalabi (2021), the Minister of Post and Telecommunications has announced that: “*Edahabia card, recorded nearly 4 million transactions in 2020, compared to 2019 by around 670,000; 487% increase in transactions in one year*”. Figure. 6 & figure.7 below show the very significant evolution, particularly from the year 2020, in the total number of payment and withdrawal transactions using CIB/Edahabia cards, ATMs, and Point Of Sale (POS) terminals.

Figure n°6: Evolution of the total number of transactions by CIB/Edahabia cards (2016-H1.2021)



Source: Established by the author based on data retrieved from (GIE, 2021).

Figure n°7: Evolution of the global number of withdrawal and payment transactions (ATMs/POS terminal) (2016 - H1.2021)



Source: Established by the author based on data retrieved from (GIE, 2021).

By 2020, high rates registered of global electronic transactions, particularly, of payments made by CIB/Edahabia cards for services in telecom and electricity/water (e-bills payments). This is explained by lockdown measures, in which people are committed to paying the necessary services for their daily use of electricity, water, phone, and internet services. Furthermore, more than 3 million electronic transactions have only been made during the first half of 2021; which means that people are going strongly toward the use of electronic payments compared to the last 04 years ago (2016-2019).

Likewise, figure 7 shows and explains the realized results in terms of a total number of ATMs withdrawal transactions by 2020, and total number of POS terminal payment transactions that increased by 2020, then upsurged very significantly by the first half of 2021.

Despite the fact that millions of Algerians have a bank account, they nevertheless rely on Over-To-Counter (OTC)* services to send and receive domestic remittances. The need to cut costs, boost money available to remittance receivers, and promote the use of digital channels is consequently more critical than ever before. Whereas, to improve the speed and reduce the cost of financial services without negotiating safety and reliability, DFS providers are mandated to have access to data from different private and public systems by introducing the open Application Programming Interface (API)** . For instance, *Jumia*, a pan-African e-commerce website, has entered Algeria, joining local platforms like *OuedKniss*, *Batolis*, *Temtem One*, *Yassir Market*, and *IdealForme*. In order to facilitate payments, telecom operators have taken use of DFS's ability to offer services such as solar energy, insurance, and financing (Delort & Poupaert, 2021).

Discussion and analysis

Yet, the role of FinTech in rising financial inclusion is emphasized in global economic shocks such as the COVID-19 pandemic. The more vulnerable struggle as a result of these shocks, the more compounding a challenge is the lack of access to finance and the opening of electronic bank accounts (Donghyun & Shu, 2020). Many who claim that FinTech is also a key player in solving many financial problems during a pandemic, benefiting a wide variety of SMEs on the African continent.

* **Over-the-counter (OTC)** is the trading of securities between two counterparties executed outside of formal exchanges and without the supervision of an exchange regulator.

** **Application Programming Interface (API)** or **APIs** are a set of functions and procedures that allow for the creation of applications that access data and features of other applications, services, or operating systems. It is a type of software interface, offering a service to other pieces of software.

The World Bank has, therefore, urged Africa to make investments in digital technologies through creative digital platforms, the adoption of digital technologies, the enhancement of technical skills, and the creation of a regulatory system (OBG, 2020b).

The pandemic effects to significant changes in the provision of DFS with retail banking in the lead, whether the development and application of the digital finance in incumbent banks as they enhance their digital banking strategies; FinTech startups or Big Technology (BigTech)^{***} firms entering the realm of finance will depend on many factors including regulation and can differ from country to another. Indeed, were the North African countries able to deal with the requirements, opportunities, and risks of the FinTech industry, particularly, in times of crisis?

The COVID-19 outbreak shows differences between developed and developing countries in the use of modern technology and the reality of financial transactions, many African countries as all developing economies need fundamental reforms to adopt to this new challenge.

Unlike the North African region, several African governments are looking to FinTech technologies as an efficient way to deliver assistance to disadvantaged client segments and firms, reducing physical cash hygiene risks. Industries are witnessing internet penetration and digital adoption over just two years in some countries, with online shopping, has risen by more than 1.7 times during COVID-19 in just two months (Kola-Oyeneyin, Kuyoro, & Olanrewaju, 2020).

However, strength enabling factors are required, where several countries have already established the essential enablers for DFS, by: i) enabling financial and digital infrastructure, ii) conducive legal and regulatory frameworks, iii) ancillary government support systems. These later need a particular interest from policymakers to deal with related issues, starting with digital connection and mobile infrastructure, electronic payments and money transactions and integrating unbanked people (Delort & Poupaert, 2021)

Conclusion and recommendations

The conceivable impacts of COVID-19 as an opportunity for the adoption of FinTech in the North African region were the main focus of the topic of this paper. It aimed, essentially, to give some element of answers to what extent the FinTech industry could be such an

^{***} **BigTech**: also known as the *Tech Giants*, *Big Four*, *Four Horsemen*, *Big Five*, or *S&P 5*, are the largest and most dominant companies in the information technology industry of the United States, especially Amazon, Apple, Google, Facebook and Microsoft.

opportunity to mitigate the financial issues faced during the COVID-19 outbreak, particularly, in the North African countries.

Based on recent and updated research finding, inspired talks, blogs and expert forums, also through reports, and statistics published by Think tanks, institutions, and governments; This paper tried to present facts, studies result, policies, challenges and difficulties, with such analysis and comparison among North African countries.

Interesting explanations and findings are extracted. Instead of mobile phones services, banking institutions are the major access to financial resources and critical financial services for many citizens in the region. This means that scalable FinTech solutions are not yet matured, also, undefined in the future for these countries, but necessary since they fill the shortages that the current banking sector can't bridge for unbanked people. For cross-border trades, conventional banks remain globally recognized institutions. Though, global FinTech solutions, such as Big Data, Artificial Intelligence, and Blockchain, will play a vital role in improving and/or compete in the conventional banking industry. Furthermore, customers are still preferring cash-based transactions; Fintech are, consequently, not accepted and non-well adopted yet.

Instead, Governments are encouraging people to adopt and strongly using the DFS solutions, COVID-19 is considered a catalyst toward the digitization of payments and money transfer operations. As a result, to fully achieve their digital potential, North African countries need to build a dynamic infrastructure and create the necessary human capital, liberalize a digital environment, and improve their innovation capabilities, also strengthen the connection between education systems and new labor market demands, as well as encourage entrepreneurship in the digital economy. Hence, proving the results exposed above; AUC/OECD (2021a) concluded to three main policy areas that should be targeted to accelerate the digital transformation: *i)* strengthening digital finance (Fintech) development, *ii)* developing digital skills, and *iii)* supporting entrepreneurship and innovation.

In fact, the leading three countries in the North African region are, significantly, registering important improvements in kind of DFS adoption. Riley et al., (2020) summarize the main recommended aspects toward the fintech industry adoption and development in the region with the following points:

- To promote DFS market growth, support has been provided, many years ago, by Alliance for Financial Inclusion (AFI) and other

partners to the Central Banks of some countries in the MENA region; Egypt and Morocco were among them.

- Regulatory reforms are much more necessary than ever to enable DFS. Therefore, private data access, technology infrastructure, political commitment; improving KYC rules, and flexible regulations; are key pillars. Egypt and Morocco have made the most inclusive ones, whereas, Tunisia and Algeria are making such progress.
- In relation to the health crisis of COVID-19, while, most of the North African countries are ongoing efforts for digitization, several health record-keeping functions are still paper-based. Either they have received a limited investment, DFS can make health insurance more accessible and affordable.

FinTech has been considering a new lending platform, in recent years, which is simpler, faster, more affordable and transparent. SMEs are rising for the first time by permitting their data to be exchanged and downloaded. FinTech lenders achieve a much better understanding of SMEs by leveraging sophisticated computational platforms and artificial intelligence for the assessment of transactional and alternative results. They will thus create the creditworthiness of companies, quickly assess risk and even grant credit as soon as possible. These emerging data and artificial intelligence solutions are today best placed to support the needs of SME's, to help them recover from the impending financial crisis and to unleash their potential. For instance, the new generations of entrepreneurs have to be encouraged to find, increasingly, easy to obtain the financing they need in fast-growing economies worldwide (Kehinde & Eksin, 2020).

To conclude, responding to the COVID-19 crisis and enhancing the financial inclusion and competitiveness of SMEs, a collaborative FinTech is, indeed, required. Thus, if this is done correctly, FinTech could also become the launchpad that would boost Africa in general and North Africa in particular to the fourth industrial revolution that leads to making it more resilient.

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