

Driving Innovation in Islamic Finance Through Financial Technology (Fintech): Analysis Study

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Abstract

This paper examines the crucial role of financial technology (fintech) in advancing the Islamic financial industry and promoting financial inclusion in North African countries. It begins by assessing the current state of the Islamic financial sector and the growth of fintech in the region.

The findings show that while Islamic finance in North Africa has experienced considerable growth in recent years, it still represents only 1% of the global Islamic financial market. Fintech platforms have emerged as key drivers of progress, contributing to market stability, increasing market share, and enhancing global competitiveness. Furthermore, fintech offers Islamic banks the opportunity to partner with innovative startups, thereby attracting a wider array of investors and opening up new avenues for expansion. The growth of the Islamic financial industry in North Africa has substantial potential to foster financial inclusion by bringing underserved populations into the formal financial sector.

Keywords:

Financial technology;
Islamic finance;
Financial inclusion;
North African economies;
Fintech;

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1. INTRODUCTION

The rapid acceleration of digital transformation in financial services has positioned financial technology (fintech) as a cornerstone of innovation within the global financial ecosystem. Fintech has fundamentally reshaped the delivery of banking, insurance, investment, and financial products, evolving from a niche concept into a sophisticated, multi-billion-dollar industry with far-reaching implications.

The Global Islamic Economy Report 2022 projects the Islamic financial industry's assets to reach \$3.5 trillion by 2024. While this growth trajectory underscores its potential, the industry faces persistent challenges, particularly in developing regions. These challenges include limited financial accessibility, complex regulatory environments, and the need to ensure strict adherence to Shariah principles.

Islamic finance, grounded in ethical and Shariah-compliant practices, has gained significant traction globally, including in North African countries. However, the sector's development in this region is constrained by issues such as regulatory fragmentation, limited market penetration, and insufficient adoption of innovative financial solutions. Fintech emerges as a transformative tool to address these obstacles and unlock new opportunities for growth and inclusion. The integration of fintech within the Islamic financial industry offers a compelling pathway to modernize operations, expand reach, and enhance overall efficiency. Key areas where fintech can drive impactful change include:

- Blockchain and payment systems, which enhance transactional transparency, security, and efficiency.
- Peer-to-peer (P2P) lending and crowdfunding, providing Shariah-compliant financing alternatives.

- Robo-advisory and wealth management solutions, delivering personalized, Shariah-compliant investment guidance.
- Regulatory technology (RegTech), which streamlines compliance processes and strengthens oversight mechanisms.

Moreover, fintech holds significant potential to promote financial inclusion by extending affordable and accessible services to unbanked and underbanked populations in Muslim-majority countries.

Despite these opportunities, the integration of fintech in Islamic finance is not without challenges. Ensuring alignment with Shariah principles, adapting regulatory frameworks to accommodate new technologies, and fostering awareness and trust within Muslim communities are critical hurdles. Overcoming these challenges necessitates a collaborative approach involving technologists, Islamic finance scholars, financial institutions, and regulators.

The convergence of fintech and Islamic finance offers a transformative opportunity to enhance service delivery, enter new markets, and contribute to financial stability and inclusion. This paper seeks to explore this potential by addressing the central research question:

How can financial technology contribute to the development and strengthening of the Islamic financial industry in North African countries?

2. Literature Review

Abdul Karim Guandouz (2019), *Financial Technologies and the Islamic Financial Industry* (Guandouz, A, 2019), where the study reviewed the types of financial technologies, and also addressed the reciprocal and sometimes conflicting relationships between

financial technologies and traditional business patterns and their expected effects on financial stability and supervisory authorities. The cases reviewed by the study showed that success in adopting financial technologies comes through alignment between technology, consumer service, and flexible business practices. Financial technologies provide a real alternative to traditional banking, payment systems, insurance services, investment funds, and almost all services that financial services institutions can provide. The study reached a set of results, the most important of which is that the entry of financial technologies into the world of Islamic finance is still in its early stages, and although there are some different applications for this technology, most actors are currently working in the field of crowdfunding. Traditional applications can also be useful to the industry. Islamic finance, as some of them are close to the principles of Islamic economics in a tangible way.

Hanan Al-Amraoui (2019), *Financial Technology Platforms as a Mechanism to Promote the Growth of the Islamic Financial Industry: A Case Study of the Nasdaq Dubai Murabaha Platform* (Al-Amraoui, H, 2019), as this study aimed to find out the extent to which financial technology platforms can be used as a means to enhance the growth of the Islamic financial industry. With a case study of the Nasdaq Dubai Murabaha platform, with the aim of demonstrating its importance in enhancing Islamic finance, whether through managing the liquidity of Islamic banks, or by enhancing the growth of the Islamic sukuk market on the Nasdaq Dubai stock exchange. The study found that the Nasdaq Dubai Murabaha platform efficiently manages the liquidity of Islamic banks, while enhancing the Sukuk listing activity on the Nasdaq Dubai Stock Exchange, which led to an increase in the strength of

demand from local and international investors, and thus the growth of the size of the Sukuk market

3. Financial technology in North African countries

With the spread of the digital revolution globally, human growth and development became determined by the levels of integration into the digital economy, which made economies shift towards the digitization of their services, especially after the Internet and smartphone revolution. Technology has advanced amazingly, and technical innovation has imposed a new reality that has changed human behavior by taking advantage of this technology. In light of these developments, interest in financial technology has become not just a luxury, but has become an independent industry with a global turnover estimated at billions of dollars, according to a KPMG report on trends and activities. The main financial technology market at the global level in 2019. The value of investments in financial technology reached \$135.7 billion (KPMG, 2020).

3.1 Financial technology and global trends

3.1.1 The concept of financial technology

There are many parties involved in developing a comprehensive concept of financial technology, including financial and banking institutions, regulatory bodies, and digital technology platforms. According to the Digital Research Institute, financial technology is the modern technological inventions and innovations in the field of the financial sector. These inventions include a set of digital programs that are used in banks' financial operations, including: transactions with customers and financial services such as money transfer, currency exchange, calculations of interest rates and profits, and knowledge of profits. Expected investments and other banking operations. (Baber, 2019, p. 12).

The Basel Committee on Banking Supervision defines it as “any technology or financial innovation that results in a new business model, process, or product that has an impact on financial markets and institutions” (Harfouche, 2019, p. 727). While the Arab Monetary Fund defined it as “products and services that rely on modern technology and are used to improve the quality of traditional financial services and operations, or have an impact on institutions in the financial sector.” (Al-Arabi, 2019, p. 163).

Therefore, it can be said that there are four intertwined and complementary elements that constitute the manifestations of financial technology: the physical aspect, which is the machines and equipment used, the usage aspect, which is the methods of using this equipment, the scientific aspect, which is the financial and banking knowledge required, and the innovative aspect, which is the acquisition of the skills necessary to provide financial and banking services.

3.1.2. Sectors covered by financial technology companies.

Startups provide a wide range of financial services to the private sector and companies from the government sector, as the most important sectors covered by financial technology companies are as follows: (Harfouche, 2019, pages 729-730)

-The payment and transfer sector: It is the most advanced sector, and it replaces traditional payment or money transfer systems. Start-up companies work to provide bill payment services, payment solutions via the Internet and mobile devices in addition to electronic wallets, and electronic records management for settling transactions, the most common of which is (the most common series). Block chains and cryptocurrencies (Bitcoin).

-The financing and lending sector: The companies providing these services provide platforms that allow individuals to obtain loans

directed to consumption, so that the lender is ordinary individuals and not investors or financial institutions in exchange for obtaining an interest rate that is generally lower compared to consumer loans provided by traditional financial institutions. The most common examples are direct lending and crowdfunding platforms, which is one of the concepts that revolutionized the financial system.

-Personal and institutional finance: combines direct lending and crowdfunding by providing banking services on digital platforms.

-Investor banking and capital markets: FinTech companies provide services that are typically provided by investment banks.

-Insurance technology: offers insurance products directly to customers or provides more efficient solutions for timely risk assessment for insurance companies.

-Wealth Management provides wealth management solutions to its clients supported by machine learning. Creating applications on mobile phones that enable individuals to control and manage their banking transactions, by monitoring the volume of spending and the volume of their income, in addition to applications that provide solutions for investors such as providing financial information, providing consultations, and managing financial portfolios.

-Regulatory Oversight Technology: It is the management of regulatory processes within the financial industry with the use of technology. The main functions of RegTech include regulatory monitoring, reporting and compliance.

The volume of investment according to each sector can be clarified in the following table:

Table1. Global private investment in various financial technology sectors

		2014	2015	2016	2017	2018	2019
Proptech	No of Contracts	45	61	70	77	112	105
	Finance(billion)	0.3	0.4	1	0.5	1.9	2.6
Cybersecurity	No of Contracts	15	16	22	32	38	53
	Finance(billion)	56.9	76.7	276.0	126.9	316.9	646.2
Payment	No of Contracts	246	285	295	343	337	306
	Finance(billion)	15.8	12.5	10.9	12.6	44.6	77.8
Regtech	No of Contracts	45	68	72	127	138	145
	Finance(billion)	3.9	1.3	3.7	1.5	4.0	2.5
Insurtech	No of Contracts	101	145	160	265	262	156
	Finance(billion)	3.3	2.9	11.8	10.0	7.5	6.5
Wealthtech	No of Contracts	22	25	18	20	39	29
	Finance(billion)	621.5	869.2	236.5	174.9	703.6	474.1
Blockchain	Finance	0.7	0.6	0.8	4.9	6.3	4.7

Source: KPMG 2020

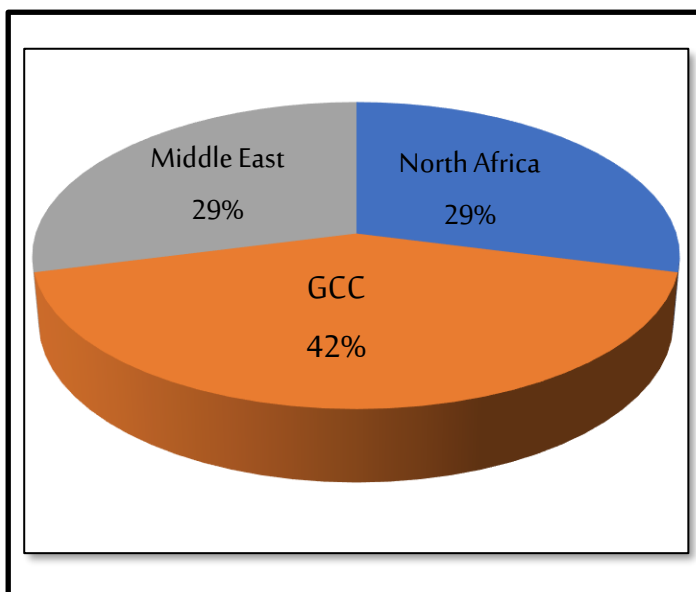
From Table (01), we notice that investment in the cybersecurity sector has increased significantly, whether in terms of financing or the number of deals. This is due to investors' interest in this aspect through Know Your Customer (KYC) technology and other technologies. Despite the decrease in investment in regulation monitoring technology in 2019 compared to 2018, it recorded a record number of deals, and this reflects the growing interest in this sector, and the increase that occurred in the last two years due to the issuance of the General Data Protection Regulation and payment services in Europe, and it is expected that This sector is seeing greater interest in the coming years with increased focus on consumer protection and data security. While investment in insurance transactions decreased by more than 40% while investment in it decreased by only 13%, blockchain

operations continue to retain great transformative potential and as they mature, their applicability will expand.

3.1. The current state of financial technology in North Africa

The financial technology revolution has spread to the Arab world, and this is evident in the clear growth in the number of companies that use this technology. By the end of 2015, there were 105 emerging companies in the field of financial technology, according to a report prepared by Berfort in partnership with Wamda Lab, covering 12 countries in the Arab world, distributed as follows: 29% in North Africa, 42% in the Gulf Cooperation Council countries, and 29% in the other countries of middle east. (Berfort, 2016).

Figure2. Geographical distribution of financial technology companies in the Middle East and North Africa region



Source (2016 Birfort)

The fintech sector in the MENA region has recorded tremendous growth over a short period of time. According to the report issued by the Magnit platform for financial technology projects in the Middle East and North Africa, the financial technology sector topped the list of other sectors in the Middle East and North Africa region in terms of the number of deals in the years 2018 and 2019. The statistics also showed that the United Arab Emirates is the largest point of attraction. The region's financial technology projects accounted for the largest share in the value of funds directed to these projects during the same period.

3.2. Number and percentage of total financial technology companies in North Africa

The report also showed rapid growth in the number of financial technology companies in this region compared to other sectors. Since 2012, the Middle East and North Africa region has witnessed a compound annual growth rate estimated at 39%. The number of these companies was estimated at 31 companies before 2013 until it reached 310 startup companies during the year 2018, and the North African region's share of them was approximately 23%. This can be further clarified in the following table.

Table 2. Number and percentage of total financial technology companies in North Africa for the year 2018 2018

Countries	%of total financial technology companies	Number of fintech companies
Morocco	3%	9
Algeria	less than 1%	Less than 3
Tunisia	2%	6
Libya	less than 1%	Less than 3
Egypt	17%	52

Source: Magnit platform in cooperation with the Abu Dhabi Market, Financial Technology Projects in the Middle East and North Africa, 2019 edition, p. 25.

3.3. The components of financial technology in North Africa

The population of North Africa reached 273 million people in 2024. This represents a large potential market for emerging financial technology companies, and the average age group is 27.1 years. The large proportion of the young population segment of the total population contributes to strengthening the position of North African countries, as the use of this segment for digital products is higher compared to other age groups, and they are adept at adapting to technological changes. Young women are also the primary target market for FinTech products and services because they are willing to try new financial offerings and are constantly looking for ways to improve how they can access them conveniently.

While increasing mobile phone penetration in many countries in the region makes it easier to reach customers. The introduction of smart phones has also led to a change in how small and medium enterprises operate and provide financing facilities to individuals, and payment systems that allow consumers to make payments through their personal devices such as phones, digital tablets, or watches. This requires the presence of high-speed Internet, as the percentage of people who have access to the Internet in north Africa reached 64% in 2022, an increase estimated at 12% over the year 2024, and the percentage of the population who carried out online payments reached 7% in North Africa in 2017, which is considered a percentage Weak when compared to the Gulf region, where it reached 76%, and 45% in the world.

Egypt has been active, compared to other North African countries, in issuing regulations and regulations, preparing programs and tools, and shifting to more attractive destinations for emerging financial technology companies, as the Egyptian government and the Central Bank of Egypt play a pioneering role in promoting

financial technology innovations, encouraging the upgrade of payment systems, and moving towards working in a cashless economy. In 2016, the Central Bank of Egypt issued new systems for cashless payments using smartphones. Only licensed banks can submit a request to provide mobile wallets and act as an issuing bank to obtain cash deposits in exchange for issuing electronic money. Emerging financial technology companies can also work in partnership with banks to provide the necessary infrastructure and technology. These services are available to bank customers and others, and can be used to transfer money, pay phone bills and other public services, and make donations. In 2017, legislation was issued to establish the National Payment Council. In April 2018, the first blockchain-focused incubator was opened in Egypt in cooperation with Egyptian companies BM Novelari and Zk Capital. (CHANCE, 2019)

For Morocco, although financial technology is still in its infancy, it has continued to grow as a sector and a legal framework that will allow financial technology to gradually grow and flourish. Morocco adopted the legal framework to regulate the use of mobile payment. Banks quickly responded to the new framework by launching e-wallets such as BPay by Banque Populaire. Non-banking institutions can also use mobile payment technology, provided that they obtain approval from the Central Bank of Morocco. As for cryptocurrencies and blockchain, the Moroccan Exchange Office issued a press release indicating that dealing in cryptocurrencies constitutes a violation of exchange regulations, and therefore any dealing in these currencies will be subject to fines and penalties. In the same context, a joint press release was issued by the Ministry of Economy and Finance, the Bank of Morocco, and the Moroccan Capital Markets Authority to warn the public about the dangers of digital currencies in November

2017. A guide was also issued by the Association of Users of Information Systems in Morocco (AUSIM) on how to use financial technology. (CHANCE, 2019, p. 21).

Positive demographic factors (the younger and more digitally savvy population segment), supporting digital infrastructure, favorable systems and regulations, and private investment are considered growth engines for FinTech companies. Therefore, North African governments must adopt a comprehensive strategy aimed at relying on digital payments and FinTech as a tool. Key to enhancing financial inclusion and the transition to a non-monetary economy, through modernizing the communications infrastructure, preparing a law to develop non-cash financial transactions under the guidance of central banks, in addition to approving regulatory frameworks that achieve the integration between information and communications technology and the financial sector (Al-Arabiya, 2020).

3.4. Islamic financial technology:

There is a group of assumptions in Islamic financial transactions that cannot be dealt with, which are usury, speculation, gambling, deception and trade in prohibited products. All of these principles must be taken into account when providing financial services so that the financial transactions provided by financial technology in its various sectors are compatible with... Islamic Sharia laws.

The Islamic economy report 2018/2019 stated that the rate of consumption of halal products in the world amounted to 2.1 trillion dollars in 2017, and the growth rate in it during the last two decades reached 10%. The main reason for this increase in demand for halal food products is due to the number of Muslim populations in the world, which It reached 1.84 billion people in 2017. This number is constantly increasing and is expected to reach 27.5% by 2030. (consulting, 2019, p. 9)

All of the above will lead to an increase in demand for Islamic financial products and services, and therefore Islamic financial institutions must provide these services, in which Islamic financial technology will have a fundamental role in achieving them and accessing them faster, easier, and at the lowest possible costs. Islamic fintech companies emerged strongly in 2010, and their compound annual growth rate is expected to reach \$3.8 trillion by 2023.

Table 3. Islamic financial technology startups in the world by 2017

Countries	No
Indonesia	31
USA	12
UAE	11
UK	10
Malisia	7
Other	22
Total	93

Source: (cente, 2018, p. 2)

From Table 03, we note that the ASEAN region has the largest number of Islamic financial technology startups. The 93 startup companies are distributed as follows:

Table 4. Distribution of Islamic financial technology companies according to sectors and technology used

Distribution by Technology	No	Distribution by Sector	No
P2P	65	Financing individuals and institutions	65
Blockchain	14	Wealth management, including zakat	15
Other	14	Transfer and deposits	13

Source: (cente, 2018, p. 21)

Despite the evolution of the Islamic fintech ecosystem, there is a clear focus in peer-to-peer (P2P) financing to make Sharia-compliant financing more accessible for businesses and consumers. At the end of the report issued by the Dubai Center for

the Development of Islamic Economy, a list of Islamic financial technology companies was drawn up, including two companies from the North African region affiliated with Egypt, namely SHEKRA and YOMKEN, which work in the field of finance, out of 93 emerging companies in the field of Islamic financial technology, which represents a percentage only 2%.

In order for emerging companies in Islamic financial technology to expand and grow further, a business environment must be provided in which there is harmony and consensus among the main players in the field of providing technical financial services

- Government: Strengthens regulatory aspects and provides direct support.

- Investors: developing assumptions about Islamic financial technology and supporting promising emerging companies;

- Start-ups: Recruiting entrepreneurs

- Consumers: Utilizing marketing and education to raise consumer awareness.

4. The Islamic financial industry in North African countries

Although the North African region began early in Islamic banking, since the first experience that Egypt had under the leadership of Ahmed Al-Najjar in practicing Islamic banking, it is still in its infancy, and it is expected to be one of the most attractive regions of the continent for Islamic finance. This is due to the large proportion of Muslims (91%), the population density (approximately 190 million people), in addition to the increasing initiatives to make Islamic finance a preferred option for decision makers in the public and private sectors and consumers alike.

4.1. The number of Islamic financial institutions in North African countries

Islamic financial institutions can be divided into three institutions, which are mainly Islamic banks, Takaful insurance companies, and Islamic investment funds. The number and distribution of Islamic financial institutions in North African countries can be clarified through the following table:

Figure (03): Number of Islamic financial institutions in North African

From Table5, we note that North African countries have 95 Islamic financial institutions out of 2,337 Islamic financial institutions in the world, including Islamic banks, Takaful companies, and Islamic investment funds, which is approximately 4.06 percent of the Islamic financial institutions in the world, where Sudan ranks first in terms of 49 institutions, followed by Egypt with 23 institutions, and Algeria and Libya each with 3 Islamic financial institutions.

We also note that Islamic banks in North African countries constitute more than half of the Islamic financial institutions, with approximately 52 Islamic banks and approximately 6 percent of the number of global Islamic banks.

4.2 The size of the Islamic financial industry in North African countries

Confidence in the Islamic banking industry is increasing day after day in various countries of the world, as available statistics show that Sharia-compliant assets increased from 386 billion US dollars in 2006 to 1,759 billion dollars in 2019, that is, at a compound annual growth rate of 12%, and the Arab countries It accounts for approximately 50 percent of the volume of Islamic banking assets

in the world. As for the North African countries, they can be clarified through the following table:

The value of the issued bonds The size of investment funds' assets
The size of Takaful insurance assets The size of the assets of Islamic banks Countries.

Table (05): Size of the Islamic financial industry in North African countries in 2019 (million US dollars)

Countries	The size of the assets of Islamic banks	The size of Takaful insurance assets	The size of investment funds' assets	The value of the issued bonds
Egypt	11740.68	NA	77.20	0
Algeria	3040.42	NA	0	0
Tunisia	1481.03	17.39	0.97	0
Morocco	156.65	0	NA	104.74
Libya	42.27	NA	0	0
North Africa	19441.11	39.47	78.17	104.74
Total in the world	1759960.83	46068.33	108153.18	124822.54
North African contribution	1.10%	0.09%	0.07%	0.08%

Source: (Obaid, 2019, page 12)

From Table (6), it is clear that the size of Islamic banking assets in North African countries is estimated at approximately 19.5 billion US dollars, and thus it is only estimated at 1.1 percent of the total global Islamic banking assets. On this basis, it can be said that the Islamic financial industry is still very far from The required level, especially the large size of Muslims, which is estimated at about 190 million. The size of Islamic banking assets in North African countries, which represent more than 70 percent of the Islamic financial industry, can be illustrated through the following figure:

4.3. The growth of the Islamic financial industry in North Africa

In cooperation between Reuters and the Islamic Corporation for the Development of the Private Sector, the Islamic Finance Development Index was launched to monitor and evaluate the degree of progress of countries in the world in the field of Islamic finance through five areas: quantitative development, the level of education, governance, social responsibility, and the level of awareness. The most important growth indicators for Islamic finance for the year can be monitored. 2019 in North African countries, according to (Table 6).

Table 6. Indicators of growth of the Islamic financial industry in North African countries in 2019

Table 6. Indicators of growth of the Islamic financial industry in North African countries in 2019

Countries	Overall index of development of Islamic finance	Islamic banking development index	Takaful insurance development index	Islamic funds development index	Sukuk development index
Egypt	13.84	36.26	9.94	5.97	0
Algeria	5.54	6.04	1.20	0	0
Tunisia	20.46	10.76	7.58	4.03	0
Morocco	13.53	13.31	0	0	0.28
Libya	9.8	17.68	3.66	0	0
North Africa	14.82	29.25	7.17	1.67	0.05
World	10.79	9.86	5.19	4.67	4.12

Source: (zawya, 2020)

From Table 6: We notice that North African countries outperform the rest of the world in both the Islamic banking development index and the Takaful insurance development index, while the growth indexes of Islamic funds and sukuks are considered lower

than the rest of the world's countries. Accordingly, we find that the Islamic finance growth index in North Africa is estimated at 14.82 points, which is higher than the world growth index, which is estimated at 10.79 points. Therefore, it can be said that the Islamic financial industry is a promising industry in North African countries in the future, especially through the tendency of governments in these countries to enact laws regulating Islamic finance, such as It happened in Algeria and Morocco recently.

5.The role of financial technology in enhancing the Islamic financial industry

According to the Dinar Standard 2018 report, the number of emerging companies operating in the field of Islamic financial technology is 93 institutions, of which 65 provide peer-to-peer technology (P2P technology) to facilitate business financing, and 18 institutions enable the deposit and transfer of funds through block chain technology. It is expected that financial technology opens the way for the Islamic finance industry to benefit from the diversity of its customer services and its competitiveness compared to traditional lenders, as this technology provides easier and faster transactions in payment and financial transfer services, and reduces costs (Guandouz, 2019, p. 95).

According to the World Bank, with the presence of fintech companies, nearly two billion unbanked adults will now have access to financial solutions. In the North African region, only 37% of the region's population of 190 million currently have bank accounts. What serves Islamic financial technology to achieve financial inclusion is through the presence of crowdfunding and direct financing platforms that are compatible with the provisions of Islamic Sharia. Financial technology platforms can strengthen the Islamic financial industry by taking advantage of financial

technology platforms, to increase their market share and confront global competition through the following points: (Al-Amraoui, 2019, p. 349).

- Providing an opportunity for Islamic banks through partnership between Islamic banks and financial technology companies. Islamic banks can benefit from it to attract a wider group of investors, and thus become more responsive to changing customer needs and emerging technology.

- Creating growth in demand for Islamic finance products around the world;

- High speed in completing transactions, which avoids risks arising from delay problems, price movements, or weak liquidity;

- Promoting the growth of the Islamic sukuk market, by greatly facilitating the issuance of sukuks, which has strengthened the strength of demand from international and regional investors.

- Financial technologies contribute to expanding the reach of this industry and allowing it to provide Islamic finance services to many customer segments that are not part of the banking system.

- The use of blockchain technology can help reduce the Islamic finance industry's exposure to risks such as transaction security and identity theft

6. Conclusion

Financial technology and its diverse applications present both opportunities and challenges for traditional and Islamic banks, as well as financial institutions. The increasing reliance on fintech is reshaping the nature and scope of banking risks as traditionally understood. While this shift introduces new risks, it also creates significant opportunities for banks, their customers, the broader banking sector, and regulatory authorities.

To navigate this evolving landscape, banks and regulators must strike a balance between preserving the integrity and resilience of

the banking system and fostering innovation within the financial sector. Adopting this balanced approach will not only strengthen the safety and stability of banks but also promote financial stability, protect consumer interests, and ensure compliance with applicable laws and regulations.

7. Results

This research yielded several key findings, summarized as follows:

- The Middle East and North Africa (MENA) region has experienced rapid growth in the number of financial technology (fintech) companies compared to other sectors. Since 2012, the region has witnessed a compound annual growth rate of 39%. The number of fintech startups grew from 31 in 2013 to 310 in 2018, with North Africa accounting for approximately 23% of these companies.

- Despite advancements in the Islamic fintech ecosystem, there remains a strong focus on peer-to-peer (P2P) financing to improve access to Shariah-compliant funding for businesses and individuals.

- North Africa has a limited presence in Islamic fintech. Egypt is home to only two Islamic fintech companies, SHEKRA and YOMKEN, specializing in financing. These represent just 2% of the 93 global startups in Islamic fintech.

- Although North Africa pioneered Islamic banking with Egypt's early efforts under Ahmed Al-Najjar, the industry remains in its infancy. However, the region is positioned as a promising hub for Islamic finance due to its high Muslim population (91%), substantial population size (around 190 million), and growing public and private sector initiatives promoting Islamic finance as a preferred option.

-North Africa hosts 95 Islamic financial institutions out of the 2,337 institutions globally, accounting for 4.06% of the total. Sudan leads the region with 49 institutions, followed by Egypt with 23, while Algeria and Libya each have 3 institutions. Islamic banks represent more than half of these institutions, with 52 banks in total, making up approximately 6% of the world's Islamic banks.

-The total Islamic banking assets in North African countries are estimated at \$19.5 billion, representing only 1.1% of the global Islamic banking assets. This underscores the significant growth potential of the Islamic finance industry in the region, given its large Muslim population.

-North African countries outperform global averages in the Islamic Banking Development Index and the Takaful Insurance Development Index, although they lag behind in the growth of Islamic funds and sukuk. The region's Islamic finance growth index stands at 14.82 points, exceeding the global average of 10.79 points. This suggests a promising future for the industry, supported by recent legislative efforts in countries like Algeria and Morocco to regulate Islamic finance.

-Fintech platforms have the potential to provide financial solutions to nearly two billion unbanked adults worldwide. In North Africa, where only 37% of the 190 million population holds bank accounts, fintech offers an avenue for achieving financial inclusion. Crowdfunding and direct financing platforms compliant with Shariah principles can significantly enhance the Islamic financial industry. By leveraging fintech platforms, the industry can expand its market share and remain competitive in the global financial landscape.

8. Recommendations:

In light of the previous results, a set of recommendations can be presented, which we mention in the following points:

-Based on the previous findings, the following set of recommendations is proposed:

-Comprehensive Strategy for Digital Payments and Financial Technology: North African governments should implement a comprehensive strategy that positions digital payments and financial technology as key drivers for financial inclusion and the transition to a cashless economy. This strategy should include modernizing communication infrastructure, enacting legislation to support non-cash financial transactions under the central bank's oversight, and establishing regulatory frameworks that integrate information and communication technology (ICT) with the financial sector.

-Regulatory Reform for Financial Technology: Central banks and regulatory authorities should introduce new regulations to address barriers to fintech, particularly electronic payments. Mobile companies should be recognized as financial service providers, not just intermediaries, enabling them to offer digital banking services. This would extend banking services, particularly in remote areas, and reduce the financial burden associated with establishing physical branches.

-Enhancing Electronic Systems and Financial Infrastructure: There should be a focus on advancing electronic systems to capitalize on the rapid development of innovative financial services and products. This includes strengthening the Arab financial system's infrastructure, improving credit and reporting systems, safeguarding creditor rights, and streamlining collateral mechanisms.

-Inclusive Access to Finance: Efforts should be made to create a supportive environment that enables youth and women to access financial services. Additionally, the scope of financial services should be extended to underserved rural areas in North Africa. The region should focus on diversifying and developing financial products aimed at providing affordable and innovative solutions for low-income groups.

-Support for Emerging Islamic Fintech Companies: To foster growth, emerging Islamic fintech companies require a business environment that promotes collaboration among key stakeholders in the field of financial technology services.

-Combatting Banking Illiteracy: Efforts should be made to combat banking illiteracy through educational programs that start at the primary school level, ensuring that future generations are equipped with the knowledge to navigate the financial landscape.

-Policy and Regulatory Support: A supportive regulatory framework should be developed that encourages fintech innovation while ensuring compliance with Shariah principles.

-Collaboration and Partnerships: Strong partnerships should be cultivated between fintech companies, financial institutions, and regulatory bodies to stimulate innovation and create a more integrated financial ecosystem.

-Education and Awareness: Increase awareness and educate the public about the benefits and opportunities presented by fintech, particularly in terms of its ability to improve financial inclusion and access to services.

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