AMERICAN JOURNALS
Open Access, Peer Reviewed Journals
American Journal of Business Management, Economics and Banking
ISSN (E): 2832-8078 Volume 4, | Sep., 2022

FINANCIAL TECHNOLOGY AND ITS RELATIONSHIP TO INDICATORS OF SUSTAINABLE DEVELOPMENT WITH SPECIAL REFERENCE TO IRAQ

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A B S T R A C T

Financial technology as an experience in the banking sector is a recent financial experience. The current study examines the ability of the banking sector to contribute to achieving the requirements of sustainable development through the role of modern technology in enabling various social groups to own electronic services and use them to meet their requirements. This will contribute to the advanced stages of achieving the seventeenth sustainable development goals. The search will focus on Iraq and how many financial technology requirements will support sustainable development requirements.

K E Y W O R D S

Financial technology, Banking sector, Sustainable development, Electronic services, recent financial experience, innovating financial and banking services, electronic payment cards.

Introduction

Recent years have witnessed many developments, especially in the technical field. This is clearly reflected in the economic and financial arenas. This stimulated the economic, financial, and banking sectors to invent new financial tools in harmony with the development in the technical field. Furthermore, innovating financial and banking services that serve the investment process. Financial technology is one of those innovations employed to achieve the development goals represented by the 2030 Sustainable Development Goals. Through practical experiences, financial and banking innovations have proven their high flexibility in development compared to traditional tools, as well as the high desire of the public to deal with financial technology tools. Iraq, like other countries, began a few years ago to introduce technical innovations in the financial and banking fields, and this is represented in the spread of the use of electronic payment cards. Also, financial technology in electronic clearing systems between banks and other banking tasks significantly reduced routine banking activities. Undoubtedly, like other countries, Iraq aims to achieve sustainable development goals by exploiting financial and banking innovations by activating banking work and expanding the provision of financial and banking services to achieve economic and social development. In order to shed light on the importance of financial technology and its role in achieving sustainable development, the study relied on the descriptive analytical approach through the data obtained. The study was divided into three sections: The first section highlighted the financial technology concept and its characteristics and challenges, while the second topic was devoted to research on the volume of investments in financial technology across the world. As for the third topic, it is concerned with digital finance in Iraq and its role in achieving sustainable development goals

1- The Problem of the Study:

The banking sector in today's world faces many challenges, the most prominent of which are the emerging companies and financial institutions that provide technological services, which entered the banking arena and began providing financial and banking services to all segments of society. This made the international banking sectors in general and the Iraqi banking sectors, particularly, face the challenge of facing emerging technology companies that have employed their technical innovations to serve society. Consequently, it became imperative for the banking sector to develop financial tools that would enable it to provide the best banking services to all segments of society. This leads to an increase in the welfare of society, which is directly reflected in the achievement of sustainable development goals. Based on the foregoing, the problem of the study can be formulated by the following question: (Have modern financial innovations represented by financial technology able to achieve sustainable development goals?)

2-The Importance of the Study:

The importance of the study is highlighted by showing the importance of financial innovations, including financial technology, in revitalizing various economic sectors, increasing their productivity, and contributing to achieving sustainable development goals. It is impossible to achieve sustainable development goals without financing small and medium enterprises. This prompted the banking sectors, including the Iraqi one, to search for financing opportunities to advance the economy and employ manpower in the country, which is reflected in achieving sustainable development goals.

3- The Objective of the Study:

The study mainly aimed to demonstrate the role of financial technology in developing the banking sector as one of the modern financial innovations. It is responsible for enabling the banking sector to achieve sustainable development goals by enabling individuals to own modern technology and make qualitative and quantitative leaps in investing in this type of financial innovation to achieve social, financial, and economic development.

4- Study Hypothesis:

The study is based on a general hypothesis:

Modern financial innovations, including financial technology, can provide an appropriate economic, financial, banking and social environment to achieve sustainable development goals.

5- Previous Studies:

Many studies have examined the role of modern financial innovations, especially financial technology, in achieving sustainable development, the most important of which are:

-Reham Ahmed Mamdouh's study, the impact of financial technology on economic justice, published in the Scientific Journal of Economics and Trade 2020. It concluded that strengthening the digital infrastructure by delivering electronic services to remote villages and poor strata of society at a reasonable cost contributes practically to increasing social welfare; thus, increasing the chances of achieving sustainable development goals.

-Rabah Berrich study, The role of financial technology in promoting financial inclusion, a case study of Indonesia, 2020. The study concluded that promoting financial inclusion in the current era mainly requires digital financial and banking products. Focused financial inclusion policies in Indonesia have succeeded in encouraging the use of financial technology and thus increasing the chances of achieving sustainable development goals.

-Jihan Abdel Salam Abbas's study, the impact of financial technology on the performance of financial and banking services in sub-Saharan Africa, 2021. The study concluded that many economic and financial advantages result from digital transformation in Africa's financial sector (sub-Saharan). Raising the efficiency and speed of providing financial services of various kinds is in the interest of improving the performance of financial and banking services in the African continent. The study expected that by the year 2035, technological innovation and infrastructure development could play critical roles in raising economic growth rates and achieving sustainable development based on the digital transformation of all kinds and forms, especially financial technology.

6- Spatial and temporal limits:

Iraq was chosen as a sample for the study, considering that Iraq is one of the newer countries using modern financial innovations, including financial technology. The study was prepared in 2022

The First Topic

Financial Technology. The Concept, Characteristics, and Challenges

First: The Concept of Financial Technology (Fintech):

One of the challenges facing the traditional banking industry is the technology gap. Perhaps the acceleration and complexity of the development taking place in the world of technology, in addition to the diverse needs of individuals and economic and financial institutions, posed a real challenge to the banking sector. It is necessary to find and invent technological means that provide banking services to various economic sectors. Studies indicate that the next few years will witness real and qualitative leaps in digitization, especially in global communications, which means radical changes in money transfer methods. The traditional banks, which used to make profits by mobilizing savings and redirecting them in loans and credit facilities to the public, cannot continue in the same pattern, especially in the coming years. The coming years will witness no use of money in its current traditional form, but electronic currencies will be replaced as a means of exchange and conducting business and economic activities. Therefore, traditional banks will be complex if they do not remedy this situation and keep pace with technological developments (Hassan, Hassan, 2019).

This acceleration and technological development will put the banking and financial space in front of real challenges represented in a world devoid of cash transactions but dealing with digital currencies. Consequently, it became imperative for the banking sector to keep pace with these technological developments and deal with them through the development of the banking industry and the investment of modern financial innovations, including financial technology.

From the foregoing, some common concepts of financial technology can be given:

-It has been defined as the technology and innovations developed to compete with the traditional financial and banking methods when providing financial services, and financial technology in itself is an emerging industry in the field of finance (Rasheeda, Saeeda, 2019, 8).

Another financial technology concept is the various services and products that take modern technology and financial innovation as their basis. This technology is characterized by its low costs, ease of use, and rapid access to many individuals (Finnish Technology Report, 2019, 7). It aims to improve the quality of traditional banking and financial service.

Others defined it as the financial products and services based on modern technology and digitization of traditional banking operations and their transformation from their traditional form to another digitized form. It is subject to the advantages of modern financial technology, which enables it to save time, cost, and effort (Omani, Hamdosh, 2017, 393).

-According to the Institute for Digital Research in the Polish capital Dublin, financial technology is all modern financial inventions and innovations that will develop the financial and banking sectors. These innovations and inventions include a set of digital programs used in financial and banking operations in various banks, including dealings with customers and providing financial services such as money transfer, currency exchange, and other banking operations (Mohamed Mahmoud, 2018).

From the foregoing, a general and comprehensive concept of financial technology can be given, as it can be defined as (the ability of the banking system to exploit the means, tools, and modern technological innovations and employ them to provide financial and banking services of high quality that contribute to achieving the welfare of members of the community in order to achieve the goals of sustainable development).

Second: The Characteristics of Financial Technology

By reviewing some concepts of financial technology in the previous paragraph, we can discern the characteristics of this technology as follows:

1- It is a set of financial and banking concepts, terms, innovations, and methods that provide the appropriate environment for banks and enable them to achieve the desires and needs of customers.
2- Financial technology is apparent through its previous concepts that it is not a final target for the banking system. Instead, it is a means used by financial and banking institutions to achieve their goals, the most prominent of which is the employment of innovative financial tools to serve individuals and institutions.
3- As one of the innovative modern financial tools, financial technology is not only applied in providing financial and banking services, but its impact extends to the development of administrative methods in managing banking operations.
4- Financial technology creates massive databases and enables customers to access these databases and benefit from them in obtaining other banking services without using the routine methods applicable in banks.
5- Financial technology is a working method for developing financial and banking services and making them available on a large scale to provide financial and banking services to individuals and institutions.

Third: The Challenges Facing Financial Technology

There are a number of challenges facing the application of financial technology, as it is one of the methods of developing banking and financial work. These difficulties or challenges can be summarized as follows (Central Bank of Iraq, 2017, 83) (Awqasem, Abdel Rahim, 2019, 329):

1- The fierce competition between a large number of financial technology companies arises due to the presence of a large number of these companies, which seek to provide modern financial innovations, especially in the field of financial and banking work.

2- Regulatory reporting and compliance requirements within the financial services sector are added to the first challenge financial technology company's face.

3- The other challenge is creating a unified work environment that includes banks and non-bank financial service providers to work under a unified regulatory framework that allows indirect matching between borrowers and investors. Fintech startups should respect the regulatory considerations imposed by the legislative authorities.

4- The main objective of financial technology is to provide a suitable environment for banking work to reduce costs, effort, and time. Furthermore, gain more knowledge accumulation of intangible assets that are difficult to evaluate in the capital markets. This creates an atmosphere of uncertainty surrounding the banking and financial industry, raising serious questions about financial coordination at the national and international levels.

5- Despite the many advantages of financial technology, it may pose a real threat to stabilizing the financial system. Global interdependence represents the threat financial technology poses to financial markets and financial instruments. Thus, it is reflected in the financial instability due to the role that financial technology plays in the intricately interconnected networks of international transactions. This makes the association rules work passively.

The Second Topic

The Volume of Investments in Financial Technology across the World

The world has witnessed a remarkable development in the volume of investments in modern financial innovations, especially in the field of financial technology (Fintech). The volume of investments in financial technology increased from 928 million dollars in 2008 to 4 billion dollars in 2013. Then the volume of investments in this field increased to 20 billion dollars in 2015, according to the research company (ValueAd). The volume of investment in financial technology reached its peak in 2020 when the amount of investments in financial technology was estimated at $46 billion. The following figure shows the development in the volume of investments in financial technology in the world.

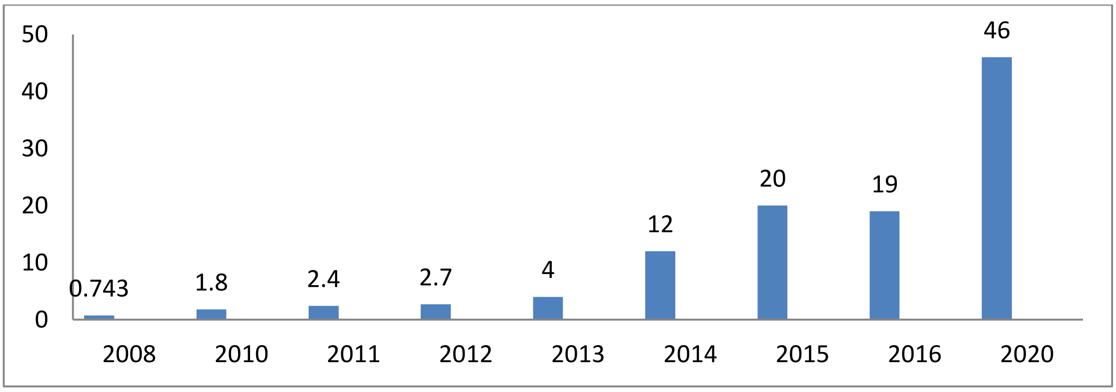

Figure 1 Investments in Fintech 2008-2020 "Billion Dollars"

Source: Money of the future report

From the previous figure, the extent of progress in the field of investment in financial technology is evident. Investments in Fintech increased from $0.743 million in 2008 to $46 billion in 2020. It is worth noting that venture capital companies contribute 24% of the total investments in financial technology. Private equity companies contribute 15%. Moreover, enterprising investors contribute 12%. Also, 49% of other investors contribute to financial technology investments worldwide.
It is worth noting that China is one of the most prominent countries investing in financial technology, as the proportion of its investment to 69%. India comes second with 52% of investments. The United Kingdom ranked third with 42%. Fourth, Brazil with 40%. Then Australia and Spain with 37%. Finally, Mexico with 36% (Kitabat website, 2017).
The following figure shows the countries that use the most financial technology:

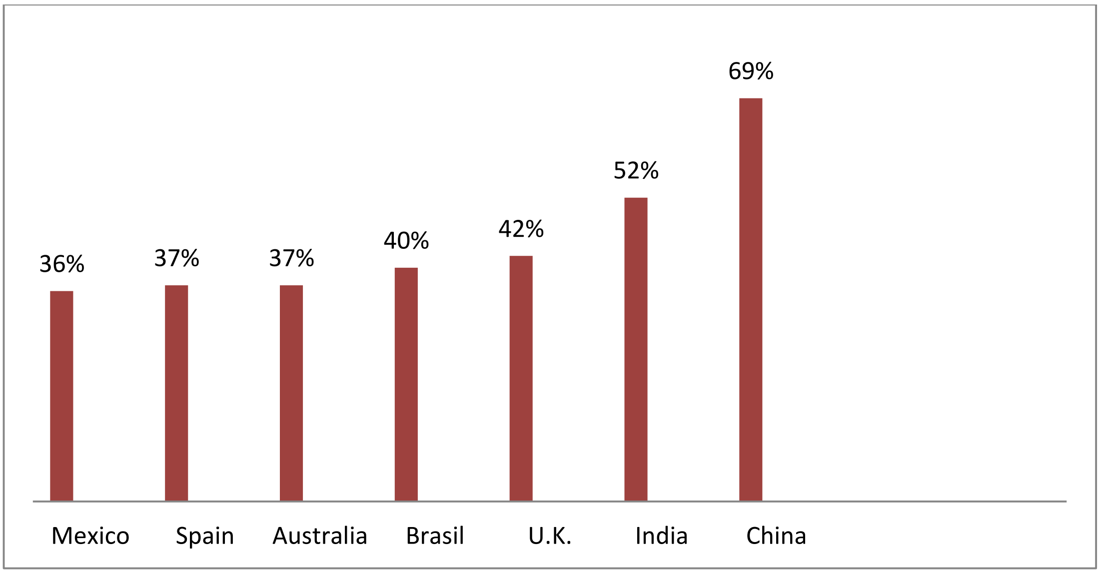

Figure 2 Countries that use the most financial technology

Source: Prepared by the researcher based on previous figures
When searching for the reasons for the high percentage of investments in financial technology for these countries, we find that Fintech contributes significantly to eliminating old habits of obtaining financing. This obliges the investor to go to the bank and apply for the credit necessary to finance his investments. Financial technology also invalidates the old habits of accepting credit cards by companies that require an account with a primary credit provider. Financial technology has addressed all those obstacles and searched for solutions to the financial problems of investors outside the traditional systems of banking and financial work. In light of financial technology, finance has become a collective action and a technological revolution in banking operations.

Through its orientations in developing banking work in Iraq, the Central Bank focused on financial technology to keep pace with the global progress in this field. The Central Bank has developed instructions for electronic payment operations via mobile phone following the latest and best international practices in this field. It seems that the Iraqi market is looking forward to further development in the field of financial technology and through the analysis of some indicators that give a perception of the Iraqi digital environment (Ministry of Planning, Central Bureau of Statistics, and Information Technology Use Survey 2011). The presence of an average age of 20 years gives a perception that many Iraqi people desire financial technology, which is reflected in the number of social network users. The data indicated that 50% of the Iraqi people use the Internet. About 50% of the population uses social networks through smartphones. 94% of the population owns a smartphone. The average age in Iraq is 20 years, which indicates a tendency to use financial technology. The Iraqi telecommunications infrastructure amounted to about 42 out of a 100-point scale. The general index of the Iraqi state in the field of growth and development in communications was about 47.5 out of a 100-point scale.

Some studies (Ibtihaj Ismail Yaqoub, Faiha Abdullah Yaqoub, Zainab Juma Matar, 2021, 68) indicate that most Iraqis who use information technology can afford the necessary expenses for financial technology developments in Iraq. Moreover, 11% of Iraqis own bank accounts, of which 2% own credit cards, and 5% of Iraqis use e-commerce applications, most of them are men.

The Iraqi government is trying to establish real partnerships with solid international institutions to build a strong financial technology base. The Iraqi government is also trying to provide adequate support to the private sector working in financial technology.

The Third Topic

Digital finance in Iraq and Achieving Sustainable Development Goals

Before shedding light on digital finance techniques and Iraq's position among the rest of the region's countries, we must first and foremost refer to the concept of digital finance. Digital Funding is one of the modern terms used in finance in the twenty-first century. It means "a group of digital financial services in the field of financial information, financial planning, payments, investments and support for joint operations between customers and banks" (Raina et al., 2018: 279-307). It is also known as "a group of technology-based products and services, modern technologies to improve the quality of financial services" (Dahman, 2020, 63-79).

The importance of digital finance is highlighted by the following:

1- Increasing financial inclusion and financial services for the non-financial sectors. Increasing the scope of services, basic services for individuals, especially if we know that 50% of developing societies own mobile phones (World Bank, 2014).
2- Digital finance provides the ability to provide banking services at the lowest costs and securely, especially for the poor classes in developing countries, including Iraq.
3- It supports the GDP of digital economies by providing platforms that ensure appropriate access to financial products and services for individuals and companies. This improves GDP levels and leads to economic stability (Ozili, 2018: 331).
4- It provides an increase in the total public spending for the government by providing platforms to facilitate this matter. This leads in later stages to an increase in the expected revenues resulting from the increase in the volume of financial transactions (Manyika et at., 2016).

The importance of digital finance and the use of modern financial technologies in achieving sustainable development goals is highlighted through the following:

Table 1 The Opportunities Offered by Digital Financial Services to Achieve the Sustainable Development Goals

Sustainable Development Goals	Digital Financial Services
Poverty eradication	For families with low incomes, digital financial services provide an opportunity to access financial tools and services at the lowest costs and help increase their economic opportunities.
Zero Hunger	Facilitating access to the financing needed to increase production rates at a lower cost would reduce hunger rates among the poor, and digital financial services provide this advantage at lower costs than traditional financing.
Good health and well-being	The use of modern financial technologies helps expand health services, especially in rural areas characterized by low population density. Digital financing allows families and families to better deal with health emergencies
good education	Digital finance has helped low-income families better manage their education expenditures. Digital financing also allows the provision of financial resources to support the male and female teachers segment and provide the appropriate educational environment and technologies that will improve the quality of education.
gender equality	Digital finance channels help women to gain more resources and assets in a way that enhances their financial capacity and increases the ability of women to manage their financial assets securely, increase the ability to access their bank accounts, and collect financial data on business owners
Clean and healthy water	One of the most prominent concerns of modern financial technologies and digital finance is to provide digital channels, billing, and payment to reduce operating expenses and secure cash flows, which helps those responsible for providing services to provide a broader supply of healthy water to customers in rural areas.
Clean energy at reasonable prices	One of the most important goals of digital finance is to provide financial systems that will reduce operational costs and thus increase access to energy and expand the area of investment in this sector
Decent work and economic growth	Digital financial services allow small and medium-sized enterprises to reduce the costs of dealing with money and increase access to the financing needed to manage these projects
Industry, innovation and infrastructure	Digital finance and modern financial technologies contribute to facilitating access to new markets. This drives digital economic growth forward, and digital financial services help grow and innovate, enabling small and medium-sized businesses to build their archive, payment history, and credit scores
Reducing inequalities	Undoubtedly, digital finance has a prominent role in neutralizing inequalities, as it provides low-income families with new tools that enable them to increase their income. Modern digital financial tools also play a prominent role in increasing the productivity and incomes of rural families by linking those families to economic opportunities outside rural communities.
sustainable cities and communities	Digital finance contributes to the provision of small mortgages, which will facilitate the task of obtaining adequate housing, especially for residents who live in informal settlements
Responsible consumption and production	Digital finance provides suitable financing channels that contribute to regulating consumption and production processes, especially for low-income families, and helps them prepare consumption and production plans that fit the nature of low-income families.
climate action	Digital finance helps individuals, communities, and government combats the harmful effects of climate change by preparing plans for those changes, especially by enhancing resilience and stimulating sustainable investments
Life under water	Digital finance provides many real opportunities, especially for workers who work in fishing, especially in rural areas, by providing the necessary support and training in a manner commensurate with the preservation of fisheries and the river and marine environment.

Life on dry land	Digital finance contributes to preparing strategies to maintain ecological balance by encouraging green and environmentally friendly investment
Peace, justice and strong institutions	Digital finance systems contribute to strengthening the principle of transparency, implementing the principle of the rule of law, and ensuring access to justice for all segments of society
Contract companies to achieve goals	Modern digital systems for financing contribute to facilitating the process of building constructive partnerships between institutions, whether at the local, regional, or international levels, by providing financial data and easy access to it at the lowest possible costs.

In this context and in light of the efforts made by the Arab Monetary Fund to advance the industry of modern financial technologies and achieve the goals of digital transformation that supports the enhancement of financial inclusion and financial stability and the achievement of sustainable development goals. The Fund has designed a general index consisting of 100 percentage points divided into six leading indicators (proposed in weights) that represent the dimensions of the environment supporting modern financial technologies in all Arab countries. This helps in drawing up and planning the national policies for each country and taking advantage of the opportunities available in the financial technology industry.
The following figure shows the six indicators above

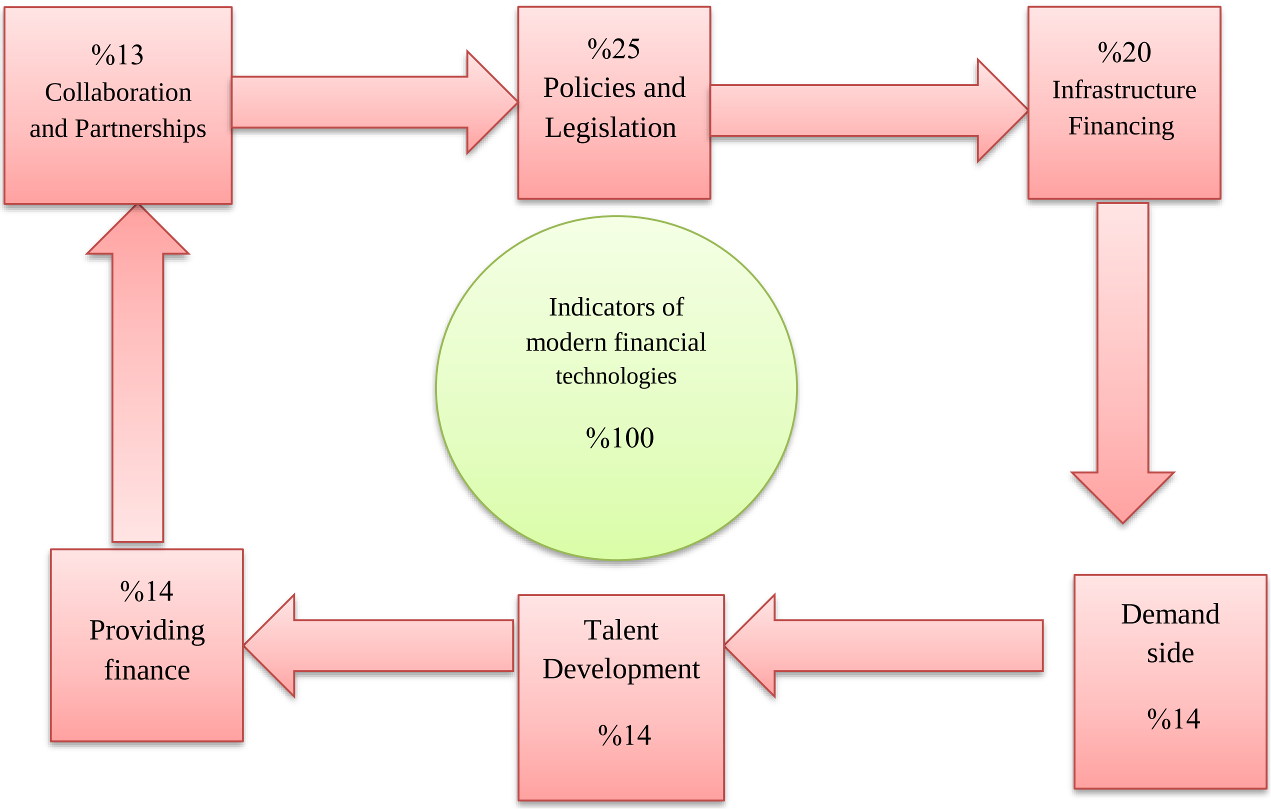

Figure (3) Indicators of modern financial technologies and their weights
Source: Prepared by the researcher based on the Arab Monetary Fund report, 2013

The axis of policies and legislation, which represents 25% of the weight of modern financial technology indicators, refers to all laws, regulations, and institutional frameworks responsible for financial activities and their governance, in addition to the necessary national strategies to provide a suitable environment for the work of modern financial technologies. As for the demand side, which weighs 14% of the weight of modern financial technology indicators, it reflects the ability of the banking system and financial institutions to meet the needs of the business sector, such as access to the international information network and everything that would improve work efficiency and reduce its costs. While the axis of providing finance constituted 14% of the total weights of the indicators of modern financial technologies, about the state's provision of the necessary support to facilitate access and financing processes, the axis of talent development constituted 14% of the total weights. This axis indicates the development of the capabilities of workers in the banking sector and refining their talents. In order to generate innovations that serve the modern financial technology sector, the financial infrastructure axis constituted a percentage of 20%. Providing an excellent financial infrastructure would achieve the desired use of modern financial technologies. Examples include the digitization of payments, modern financial technologies in financial settlements between local and international banks, and the implementation of clearing and trading works. As for the axis of cooperation and partnerships, it constituted 13% of the total weights, and the function of this indicator is to give a perception of cooperation and partnership between all relevant parties such as banks and financial institutions among themselves and with modern financial technology companies and institutions, whether at the local, regional or international levels.
With regard to Iraq, the data listed in Table No. (2) The following indicated its status among the Arab countries concerning the six sub-indicators referred to above:

Table 2 The General Indicator and the Six Main Sub-Indicators in Iraq (%)

general indicator	**Collaboration and Partnerships**	**Infrastructure Financing**	**Talent Development**	**Providing finance**	**Demand side**	**Policies and Legislation**
14	0.000	0.243	0.000	0.000	0.267	**0.233**

Source: Prepared by the researcher based on the Technology for Development in the Arab Region Bulletin, United Nations, ESCWA, 2019, pp. 85-115.
From the previous Table, it is clear that Iraq is still lagging behind other Arab countries, especially the United Arab Emirates, Saudi Arabia, and Bahrain. These countries achieved general indicators 75%, 65%, 64%, respectively, and occupied the first three Arab positions in this field, while Iraq ranked before the last with a general indicator of only 14%. Sudan ranked last with a general index of 9%.
It is clear from the previous Table that Iraq has not achieved any achievement in the three indicators (financing provision, talent development, cooperation, and partnerships). The percentages of these indicators amounted to (0.000) compared to the rest of the countries that have achieved qualitative leaps in these indicators and made advanced strides in developing the modern financial technology sector.
The following figure illustrates Iraq's Arab position in the indicators of modern financial technologies:

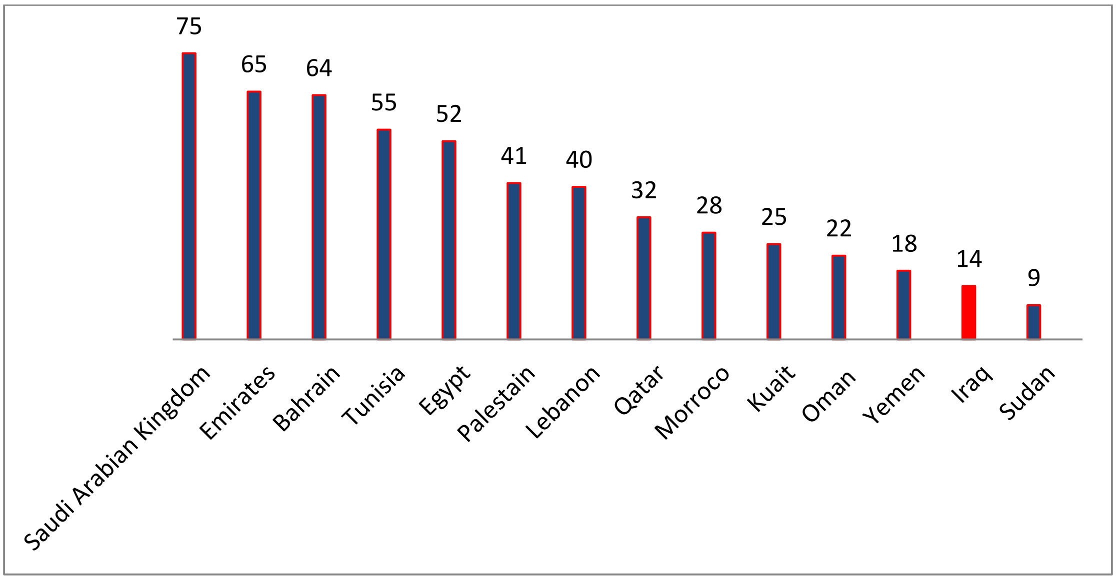

Figure 4 Iraq's ranking in the indicators of modern financial technology in the Arab world

Source: Prepared by the researcher based on the Technology for Development in the Arab Region Bulletin, a previously mentioned source.

In light of the above results, Iraq is still lagging in modern financial technologies compared to other countries, which makes Iraq lag behind other countries in achieving the seventeen sustainable development goals mentioned previously in Table (1).

Conclusions and Recommendations

First: The Conclusions

Through the foregoing, the study reached several conclusions regarding the digital finance industry in Iraq, the most prominent of which are:

1- The results are shown in Table (2) reflected a significant decline in the general indicator and the sub-indicators, especially those related to providing financing, developing talents, cooperation and partnerships.
2- Undoubtedly, modern financial technologies represented by digital finance have become an integral part of the lives of societies and a reality for banking devices because they provided many financial innovations that contributed to the provision and delivery of various financial services to all segments of society.
3- From the foregoing, the study concluded that modern financial technologies (Fintech) had become imperative to advance the wheel of sustainable development and achieve its goals at the lowest costs.

Second / Recommendations

1- The necessity of developing an integrated legislative framework and providing an appropriate and supportive environment for modern financial technologies would increase the chances of achieving tangible progress in the indicators of modern financial technologies.
2- Working on designing strategies that would develop talents' capabilities and help them with modern financial innovations, as well as the need to take care of youth and university students, and

teach modern financial technology subjects, especially in financial and banking departments, to build an experienced generation to work on providing the best banking services.

3- Working on designing and establishing national platforms related to digital identity and establishing digitized financial systems, especially government payment systems, and private sector payments.

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