

The role of the digital economy in development - the use of artificial intelligence as a model

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Abstract

Modern technologies have contributed to all the facilities and requirements of life, including the digital economy. Where he had a role in promoting the growth of Islamic finance, and making a quantum leap in its activities, using artificial intelligence in its various forms that were employed in this aspect.

The study aimed to explain the concept of the digital economy and digital platforms, their advantages and the problems they face, as well as explaining the concept of artificial intelligence, its importance and areas of application.

The research dealt with artificial intelligence and the role of modern technologies in the digital economy, by establishing electronic databases to serve Islamic finance to achieve development, as well as by developing educational and training programs in Islamic finance in order to develop scientific research in the digital economy and modern technologies that contribute to it.

Then the research highlighted the role played by the digital economy in development using artificial intelligence, and the necessity of using these technologies and dealing with them on a large scale in the Islamic finance sector.

Keywords: digital economy, digital platforms, artificial intelligence, Islamic financial products.

Introduction

The large world has become a small global village, and information objects in human life have also formed a large size and occupied vast areas in the multiple uses of Internet networks and their multiple uses, such as the Internet of Things, artificial intelligence, robots, and others. As a result of interaction with these inventions, new terms emerged, as the digital economy, Islamic financial products, and artificial intelligence emerged, which was employed in wide areas of life and in a scope that includes financial services using modern technologies. In the field of finance under research, these technologies have facilitated financial transactions, reduced the cost of obtaining financing, increased market efficiency, and expanded trade. This new reality has been reflected in many sectors, and financial institutions, financial services, investment companies, so this study came to reveal the role of the digital economy in development and artificial intelligence.

Research problem

Modern technologies have revolutionized the world of finance and business, and dealing with them has become an inevitable necessity required by the laws of creativity and development, this study came to reveal the aspects that show the interaction of the Islamic finance sector with the digital economy system by answering the following main question: How can the digital economy enhance the growth of Islamic finance? What are the positive aspects that the Islamic financial

services industry can benefit from in light of technical acceleration and modern digital transformations?

Research objectives: The research aims to do the following:

- 1- Explaining the concept of the digital economy and its advantages.
- 2- Explaining the importance of digital platforms and their role in development.
- 3- Explaining digital technologies in formulating new concepts of creativity.
- 4- Explaining the reality of the Islamic financial sector's interaction with digital technology variables and employing them towards the digital economy.

Research Methodology

The scientific method used in this research is descriptive and analytical to study the role of the digital economy in advancing the process of Islamic finance and identifying aspects that can be benefited from, by extracting the results of research, studies, reports, and statistical data issued by global financial institutions.

The importance of study

Artificial intelligence applications are an important tool in saving time and facilitating the routine process for all professionals in the field of digital marketing, in order to benefit from predictive analytics and harmonize financial affairs in order to take into account sales and marketing teams and increase revenues, in addition to the impact on financial departments and the challenges that can be faced when using artificial intelligence.

The first topic: the digital economy and digital platforms

The first section: The concept of the digital economy and digital platforms

1st: The concept of the digital economy

- 1- The digital economy: hopes and risks in the era of smart networks. Some of them called it the knowledge economy, and some of them defined it as the information economy¹.
- 2- The digital economy: It is an economy that leads to good rules and characteristics that go beyond the rules and characteristics of the traditional economy in general and the industrial economy in particular².

¹ (Al-Omari, 2008, p. 37)

2nd: Features of the digital economy

One of the most important features of the digital economy is that goods and products transform from the physical, tangible form to the digital form, as it is easy to store them in the form of numbers, so they can be exchanged in the digital market³

3rd: Digital platforms

- 1- **Digital platforms:** They are a system that facilitates the communication process for a group of people to achieve specific goals, which may be services, products, events, education, or other things.
- 2- **The Internet of things:** This term appeared in 1999 AD, and was first used by the British scientist Kevin Ashton, who thought about linking digital home electrical devices in a way that allows knowing their status while they are far from the user (Friedman - P 2). This idea quickly gained the approval of major companies - such as: Gartner - Which was reformulated and made changes to include people, animals, and clothing, and devices were linked to the global network instead of small local networks⁴.
- 3- **Robots:** Robots are automatic devices that can be adapted and reprogrammed to carry out tasks with great speed and accuracy. For greater accuracy, what is called Computer Vision has been added to them to analyze images via a special computer installed in the robot. Because of their development, they have been assigned functions that humans are unable to do. Such as military services, explosive disposal, examining explosive packages, and piloting drones on reconnaissance missions to monitor enemy movements⁵.
- 4- **Cloud Computing :** This is an old idea that began in the sixties of the last century, and after that the use of this term spread, in light of the need for large storage capacities on the Internet, and after that the giant Microsoft announced its interest in this technology and issued the Vista operating system The new model in computing relies on modified electronic elements that can store information in addition to its basic functions. Cloud storage is a model of storage on the Internet. Cloud computing derives its importance from its storage capacity for big data, which becomes a store of value if it is transformed into information⁶.

Section Two: The digital economy: advantages and problems

Technology has contributed to the development of the financial sector significantly, and has created a major qualitative shift in it. New financial applications have helped facilitate the lives of consumers, through the use of the Internet and modern means of communication, which have played an effective role in this direction:

² Abboud, 2008, p: 81-82

³ Laurence, P 134.

⁴ (<http://www.aljazeera.net /2015>)

⁵ Al-Bashir, Fadl Abdul Karim, *The Role of the Digital Economy in Promoting the Growth of Islamic Finance*, King Abdul Aziz University - Jeddah, Bait Al-Mashura Magazine, State of Qatar, Issue (9), October 2018 AD.

⁶ (Kallow. 2015 - 82)

1st: Advantages of the digital economy

There is no doubt that every scientific invention has advantages and benefits, and at the same time it has problems, so the benefits that can be achieved from the digital economy lie in the following points:

- 1- The real cost lies in research and innovation. And the experience that comes from scientific research forms an accumulation of knowledge that pushes towards the development of the industry to increase technical programs and modern applications that are characterized by strength and effectiveness.
- 2- Increasing opportunities for cooperation between institutions at a rapid pace in various forms of partnership has led to the emergence of network institutions.
- 3- Changing the industry and developing products in new ways that benefit customers and service providers alike.
- 4- The major changes brought about by digital transformation; In financial and accounting works, especially those related to the payment system, sending invoices, etc., as is used in stock trading, which is now carried out in a direct manner, and confirmation of the completion of the process is sent immediately.
- 5- Expanding the information base for many poor people and their access to financial services⁷.

2nd: Problems of the digital economy

The problems associated with the digital economy are many and varied, some of which can be addressed in the following points:

- 1- Contemporary technologies are significantly disrupting employment opportunities in that they are replacing the human workforce in the majority of jobs and professions.
- 2- Violating user privacy if hackers are able to penetrate smart networks in homes⁸.
- 3- Violation of intellectual property rights by individuals, companies, or legal entities to own programs, because the development of these programs requires large sums of money⁹.
- 4- Information technology crimes are constantly increasing due to their ease¹⁰
- 5- Modern technology contributes to wasting time by keeping workers busy with various applications, including written text or audio messages¹¹.

The second requirement: Artificial intelligence and its application areas

Artificial Intelligence has grown its presence in asset management and revolutionized the sector in many ways. It has improved portfolio management, trading and risk management practices

⁷ (<http://business.ma7room.com>)

⁸ (<http://www.katebmustaqel.com/2016>)

⁹ (<https://www.project-syndicate.org/-2015-08>)

¹⁰ Welsh, Chris, *The Dark Side of Technology: The Risks of the Digital Age Detract from Its Advantages*, Finance and Development Magazine, Issue 53, No. 3, September 2016, p: 16.

¹¹ Welsh, 2016, 14.

through increased efficiency, accuracy and compliance. In particular, AI technologies help create portfolios based on more accurate risk-return expectations and more complex constraints¹².

- 1- **The concept of artificial intelligence:** The concept of artificial intelligence (in English: Artificial Intelligence) is related to the intelligence associated with digital or electronic devices such as; Computer, cellular devices or robots, and artificial intelligence expresses the ability of these digital devices to perform tasks related to intelligent beings¹³.
- 2- **The importance of artificial intelligence :**Artificial intelligence is important in our lives; The use of artificial intelligence applications has brought about a major revolution in the automation of routine tasks, as automating a variety of manual processes can allow teachers more time to focus on their core competencies. It is noteworthy that the power of artificial intelligence can automate most regular tasks, including administrative work, correcting... Papers, assessing learning styles¹⁴.
- 3- **Types of artificial intelligence:** The following are the types of artificial intelligence:
 - **Reactive machines**
Interactive machines are known as the simplest existing level of robot, as it is a machine designed to deal with one type of data and respond to current situations only. Examples of interactive machines include; Machines designed to play chess against humans¹⁵.
 - **Limited memory**
A finite memory machine is a machine capable of storing a limited amount of information based on data that a finite memory machine has previously dealt with, so that a finite memory machine can construct knowledge from memory when combined with previously programmed data.
 - **Self-awareness**
Self-awareness devices are an ultimate goal for the existence of artificial intelligence, and they are devices that do not currently exist. These machines have awareness of the human mental level and understand why they exist in this world, and this conclusion is based on the feelings that the person feels. The same, so that these conclusions are due to the existence of the mind.

Section Two: Fields and applications of artificial intelligence

First: the fields of artificial intelligence¹⁶

Artificial intelligence has entered into limitless applications and fields, including:

- 1- **Robotics:** which is used in many industries such as health care, finance, and marketing.
- 2- **Exploration of outer space:** such as machines sent into space; Satellites, map building, and location tracking technology.

¹² (Alyssa, 2023,82)

¹³ (Britannica, 2021,97)

¹⁴ . (David Karandish ,2021)

¹⁵ (An Introduction to Artificial Intelligence: 2021)

¹⁶ (Artificial intelligence (AI)", www.britannica.com, 2017).

- 3- **Customer service:** such as robots that are used to respond to customer chats, and robots that perform customer service and electronic marketing functions.
- 4- **Stock market and finance:** such as algorithms that are used to analyze stocks in the financial market, and analyze and predict profits and losses.
- 5- **Digital media:** It displays advertisements that are of interest to the target person by analyzing his data and understanding his trends from his searches on the Internet.
- 6- **The health care sector:** so that health care machines can analyze the patient's condition based on his data, predict the diseases that may occur to him in the future, and determine the type of treatment.
- 7- **Facial recognition:** This technology is used in many devices, such as the smartphone, and works to learn and perceive patterns to produce quick and effective results.

The second section: The role of digital technology in Islamic finance and indicators for measuring the digital economy

Islamic finance is part of a global financial system that interacts with financial markets and interacts with other economic sectors, and it has achieved great successes. It has spread over a wide geographical area around the world despite its short lifespan compared to traditional financial institutions¹⁷.

The 1st requirement: The role of modern technologies in digital transformation:

The first section: Technologies that can transform the way these institutions operate, there are many technologies that can transform digital transformation, most notably the following:

1st: Digital financial services

Digital financial services have become a reality that customers live in and use to conduct their financial transactions without effort and hassle. From their homes, these customers can access their accounts via the Internet¹⁸.

2nd: Exchanging money digitally:

Developments that have emerged in the financial industry have led to changes in the field of payment systems. Money has transformed into a new form, and methods of payment and transfer of money across borders have developed. They are no longer limited to traditional methods, and have been replaced by new payment methods based on the Internet¹⁹.

3rd: Digital finance

¹⁷ Al-Hashel, Muhammad, International Monetary Fund Bulletin, Islamic Finance and Meeting Global Aspirations, November 2015.

¹⁸ (Kishan, 2016.p3)

¹⁹ (World Bank, Preparing a Money Transfer Strategy, 2005 No. (10).

Islamic finance institutions can benefit from their wide reach and provide financing to many beneficiaries according to recognized formulas, and interact with financing seekers through digital technologies²⁰.

4th: Developing and marketing Islamic financial products through digital technologies

Within the framework of developing financial products, the efforts of those in charge of this platform culminated in organizing events that serve the products of the Islamic financial industry, as it reviewed new products being launched: flexible credit cards, the Waqf Fund project, and exchange sukuks, as well as the trading of Islamic sukuks as it is one of the most important financial products used. In financing large projects²¹.

Section Two: Creating electronic databases to serve Islamic finance

New attempts to create digital databases have begun to appear on the horizon, the most prominent of which is the Islamic Finance Portal launched by Thomson Reuters for International Economic Information Services, which includes, in addition to rating agencies, parties concerned with the Islamic financial industry. What distinguishes this database is its reliance on an interactive system for analyzing financial data and comparisons for a wide range²².

Section Four: Modern technologies and the development of scientific research in Islamic economics and finance

1st: Scientific research is considered one of the pillars of this knowledge, indeed its foundational pillar. Through research, nations develop and science advances. Therefore, Islamic financial institutions must pay special attention to it, and for this purpose establish research units that provide them with all the requirements and aids to produce high-quality scientific research and contribute to Forming a new generation of researchers²³.

2nd: Educational programs in Islamic finance in the digital space

Educational programs in Islamic finance are largely limited to the digital space, despite its many advantages. It gives the educational material a global character as it can be used in other educational environments. It also gives learners the opportunity for social interaction and collective participation in order to build new knowledge²⁴.

The second requirement: Indicators for measuring the digital economy:

There are a set of indicators that can be explained as follows:

²⁰ (Al-Bashir, 2018, p. 54)

²¹ (<http://www.alittihad.ae/details>. 2016).

²² (Al-Bashir, 1438, p. 66)

²³ (Siddiqi, 2007)

²⁴ (Abdel Fattah, D.T., p. 2).

- The shape and size of the main components of the digital economy that are still in the development stage, such as electronic commerce, electronic banking, etc.
- The use of advanced technology by business companies, especially in the field of electronic commerce.
- Changes that occur in the structure and jobs required in the labor market, which include changes in the distribution of goods and services in addition to changes in the nature of competition in local and global markets.
- The economic and social impact of information and communications technology and its application, such as the change in production resulting from investment in information technology.
- The nature of the demographic characteristics of society in light of the presence of the digital economy²⁵.

Section One: The basic pillars for achieving the sustainable development goals²⁶

The 1st pillar: Institutions: It includes the regulatory environment index, which aims to measure the government's ability to formulate and implement consistent policies.

The 2nd pillar: infrastructure

This pillar embodies the tangible infrastructure of a country's transportation, telecommunications, logistics, and information technology networks.

The 3rd pillar: digital government

The digital government pillar is used to measure the extent of government institutions' readiness and ability to use information and communications technology to provide public services and consider the individual as the main focus of development.

4th pillar: innovation

One of the main problems facing the Arab world is the lack of a productive sector that plays a vital role in promoting innovation and creativity. This is because the Arab region is often a consumer of ICT goods and services rather than producing them.

The 5th pillar: knowledge and technology

The knowledge and technology pillar is based on the ability of different professions to easily access emerging technologies, whether at work or at home. This pillar measures the quality of management systems for managing companies and businesses and compliance with quality standards.

6th Pillar - Sustainable Development Goals

²⁵ (Mohsen (2020), pp. 163-181).

²⁶ (Arab Digital Economy Index, 2022, p. 130- 148).

Arab countries can harness ICT tools to achieve sustainable development goals, despite the different impacts of ICT on sustainable development goals. ICT plays an important role in achieving sustainable development goals.

The following table summarizes the potential role of ICT in achieving each of the most affected sustainable development goals²⁷.

| Development goals Sustainable | The role of information and communications technology in achieving the sustainable development goals. | The impact of technology and communications |
|--|---|---|
| Objective 1: Eradicating poverty | The ICT sector can be a major job producer in many Arab countries. Governments need to create enabling environments that improve the quality of life of their citizens. | high |
| Objective 2: Complete elimination On hunger | ICT can help provide skills, such as helping farmers increase crop production Reducing energy consumption rates as well as improving food security and nutrition safety. | high |
| Objective 3: good health And well-being. | ICT tools and services can provide information about health and levels of well-being, so citizens need access to the Internet to obtain this knowledge. | high |
| Objective 4: Quality Education | E-learning and distance learning are important to ensure that people living in rural areas receive a quality education. Digital literacy must therefore begin in primary schools to ensure familiarity with digital tools. | high |
| Objective5:Clean water and hygiene | Smart water management technologies have helped reduce water waste. It also helped Providing clean drinking water in many countries in the Arab region. | high |
| Objectiv6:Responsible consumption and production | The Internet of Things, big data analytics and artificial intelligence can dramatically improve supply chains, and when these tools do not work effectively, as seen during the Corona pandemic, over-consumption and under-production occur. | high |

The role of information and communications technology in achieving other sustainable development goals

(Arab Digital Economy Index, 2022, p. 148, with some modification.)

²⁷ Arab Digital Economy Index, 1st edition, 2022, Council of Arab Economic Unity, League of Arab States, Cairo - Arab Republic of Egypt, p. 148.

The results of the axes and pillars were as follows:

| Axes | Pillar | Result | The Benchmarking | Average contrast |
|--------------------------------------|--|--------|------------------|------------------|
| Digital government | 1 st pillar: institutions 4 th pillar: digital government | %49.1 | %87.2 | %58.5 |
| Digital foundations | 2 nd pillar: infrastructure | %32.8 | %72 | %59 |
| Digital readiness For the citizen | 3 rd pillar: the workforce | %52.67 | %78 | %42 |
| Digital innovation | 5 th pillar: innovation 6 th pillar: knowledge and technology | %28 | %53 | %31.5 |
| Digital Business | 7 th Pillar: Market Forces 8 th pillar: capital market growth | %50.35 | %87 | %54.6 |
| Sustainable development | 9 th Pillar: development goals Sustainable | %55.6 | %77.9 | %53.7 |

Arab Digital Economy Index, 2022, p. 157. With some behavior.

Results of the axes and pillars for Arab countries and with benchmarking countries

- 1- **Digital Government:** This dimension aims to meet the needs of individuals and society by providing and improving the delivery of public services.
- 2- **Digital foundations:** This dimension aims to provide the necessary foundations for a solid digital system that includes infrastructure, policies and regulations, digital skills, finance, and governance.
- 3- **Citizen digital readiness:** This dimension aims to make the citizen the primary focus of the digital transformation system, and for digital technologies to improve the quality of life of citizens and civil society.
- 4- **Digital innovation:** This dimension aims to benefit from the innovation environment as a catalyst for digitization, as new digital technologies such as 3D printing, artificial intelligence, big data, and cloud computing lead to a revolution in concepts and to the creation of new sources of added value for many industries.
- 5- **Digital Business:** This dimension aims to make the business sector the largest beneficiary of digital transformation processes. This will increase the value provided to the consumer, improve cost efficiency, and establish a larger customer base by providing opportunities to enter new markets.

These five strategic dimensions are the main foundations that make up the digital economy, and continuous attention and interaction with them and what concerns them, in order to enhance the process of transformation and the digital future in the Arab countries.

Based on these dimensions, the Arab Digital Economy Index analyzes the performance of Arab countries and classifies them according to their readiness for the digital economy. It provides a statistical analysis for each country in which it identifies the directions and requirements of economic growth and governance to keep pace with digital changes and build future mode

Conclusion: results and recommendations

First: Results:

- 1- Artificial intelligence has entered into limitless applications and fields, and one of these fields in which Islamic financial institutions can promote their products via digital platforms is the trading of Islamic instruments as one of the most important financial products, as well as the development of stock trading systems.
- 2- There are many digital applications and modern technologies that can be used in the Islamic financial services industry, including the development of financial products and digital financial services.
- 3- Within the framework of developing financial products, the efforts of those responsible for this platform have culminated in organizing events that serve the products of the Islamic financial industry, and within the framework of what is known as financial integration, which aims to provide basic financial services.
- 4- A strong communications network helps access to markets, goods and services and access to knowledge and skills.
- 5- The ICT sector can be a major producer of job opportunities in many Arab countries in order to eradicate poverty.
- 6- The Internet of Things, with a distinct logistics framework, can help provide more efficient data-based skills, such as helping farmers increase crop production, reduce energy consumption rates, as well as improve food security and nutrition safety, which contributes to development.

2nd: Recommendations

- 1- It has become necessary for Islamic finance institutions to adopt the creation of digital databases for this industry.
- 2- Regulatory authorities in countries that embrace Islamic finance must be aware of the importance of knowledge and strive to bridge this gap. Knowledge means a set of factors, including data, information, communications and technology.
- 3- Activating the digital innovation dimension to benefit from the innovation environment as a catalyst for digitization.
- 4- Striving to make the citizen the primary focus of the digital transformation system, and for digital technologies to improve the quality of life of citizens and civil society.
- 5- E-learning and distance learning are important to ensure that people may begin in primary schools to ensure familiarity with digital tools.
- 6- The regulatory authorities in the countries that embrace Islamic finance must give importance to knowledge and digital financial services.

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