

## Article info

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## Research Article

# The role of the digital economy in enhancing the dimensions of sustainable development in developing countries: an analytical study

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## ABSTRACT

This research project will provide an examination of the digital economy as well as how it can affect sustainability in terms of economic, social and environmental development. The study includes a description of both the digital economy and its key elements, along with a discussion of what is meant by the term 'sustainability' and all of its meanings. Furthermore, this study focuses on analyzing how these two aspects of development are connected and how digital technology positively impacts each of these categories of sustainable development by improving productivity, developing education, healthcare, banking and other services and creating innovative opportunities for financial access. The study showed that the digital economy positively impacts the achieving the Sustainable Development Goals (SDGs); however, there are many challenges that impact digital transformation including lack of digital infrastructure, shortage of technological skills, and lack of adequate legislation around the digital economy - particularly in developing nations. Recommendations included increased support for digital transformation, infrastructure development, and investments in new technologies. These are key requirements for achieving sustainable and inclusive development.

**Keywords:** digital economy, sustainable development, digital transformation, digital technology, financial inclusion, economic development, environmental sustainability, digital innovation.

## FIRST: THE METHODOLOGICAL FRAMEWORK OF THE RESEARCH

Over the last few decades, there has been a rapid pace of development in the areas of digital technologies and Communication, resulting in the development of the digital economy which has become one of the key drivers of economic growth and contemporary development today. Digital technologies such as the Internet, Artificial Intelligence (AI), Cloud Computing, and Big Data have fundamentally transformed the way we conduct economic activities, and how we produce, distribute, and consume goods. Therefore, the digital economy is an integral part to the construction of contemporary economies. On the other hand, the concept of Sustainable Development is emerging as a global framework for sustaining a balance between economic growth, social equity & justice, and environmental protection, while also providing for the needs of today without diminishing the ability of future generations to meet their own needs. As the digital economy continues to evolve and expand, so too does interest in understanding how it relates to sustainable development – because of the potential offered by the digital economy to help improve efficiency in economies, promote new forms of innovation, create new development opportunities, create jobs, and ensure people have access (financially) to basic needs.

In spite of being provided with numerous opportunities from the digital economy, developing nations continue to encounter many challenges regarding their own advancement in terms of digitization. These challenges include insufficient digital infrastructures, a lack of technical expertise and poor legal frameworks/ legislation associated with the digital economy. As a result of the abovementioned factors, it is vital to conduct research to explore how the digital economy contributes to sustainable development and further assess how the two are related to one another within the context of sustainable development.

**1. The research problem:** Many developing nations across the globe are attempting to achieve Sustainable Development despite being hindered by their lack of Digital Readiness and Investment into new technologies during an era marked by rapid Digital Transformation; hence, it is necessary to find out how well the Digital Economy will support the Social, Economic, and Environmental dimensions of Sustainable Development. To that end, the core Research Question is as follows::

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## What is the impact of the digital economy on achieving sustainable development the following questions arise from it?

- What is the concept of the digital economy and what are its main characteristics and dimensions
- What is the nature of the relationship between the digital economy and sustainable development, and how does digital transformation contribute to achieving its economic, social and environmental dimensions.
- What are the main challenges facing the implementation of the digital economy, and what mechanisms are proposed to enhance its role in supporting sustainable development.

**2. The importance of research:** the importance of research stems from the importance of the digital economy as one of the modern economic trends that contribute to improving the efficiency of economic performance, raising growth rates and promoting innovation. The importance of research is also highlighted by its link to sustainable development, which has become a strategic goal that various countries are striving to achieve. The importance of research is the following:

- Highlighting the concept of the digital economy and its various dimensions.
- The role of the digital economy in achieving sustainable development.
- Clarify the relationship between digital technology and economic growth.
- Contribute to providing a knowledge framework that helps researchers and decision makers.
- Supporting digital transformation trends in developing countries.

**3. Research objectives:** the research seeks to demonstrate the importance of the digital economy and its role in supporting modern development paths, by focusing on a set of main objectives, namely:

- Identify the concept of the digital economy and its basic characteristics.
- Clarify the concept of sustainable development and its various dimensions.
- Analysis of the impact of the digital economy on achieving sustainable development.
- Identify the most prominent challenges of digital transformation with proposals to enhance its role in supporting sustainable development.

**4. Research hypotheses:** the research is based on a set of hypotheses that aim to explain the nature of the relationship between the digital economy and sustainable development, and to indicate the extent of the impact of digital transformation in supporting the economic, social and environmental dimensions.

### There is a significant relationship between the digital economy and sustainable development.

- The digital economy contributes to enhancing economic growth and improving the quality of services.
- Digital transformation has a positive impact on achieving environmental and social sustainability.
- The development of digital infrastructure supports sustainable development.

**5. Research methodology:** the research was based on the descriptive analytical approach, by studying the concepts related to the digital economy and sustainable development and analyzing the relationship between them based on the literature, previous studies and recent economic reports. The analytical method was also used to explain the role of the digital economy in supporting the dimensions of sustainable development and identify the most important challenges and obstacles facing its application.

**6. Limits of research** The parameters of research will be determined by dimensions that will clarify the limits of the research and provide it with a direction toward science. The research will objectively focus on the study of the digital economy and its effect on achieving sustainable development in economic, social and environmental ways. Research will look at developing countries, as well as looking at several Arab countries and their transition into a digitally transformed world as compared to sustainable development, from a geographic perspective. From a time perspective, the research will examine the rapid growth of digital technology in recent years, the rapid increase in digital technology usage, and how this impacts sustainable development..

**7. Previous studies:** In the past few years there has been much greater focus given toward digital economics and sustainable developments due primarily to rapid advancements in HCITs; a major driver behind the digital economy which can help improve significantly economies, communities and the environment. A lot of research has been performed around the relationship between digital economy & achieving SDGs. This research emphasis ranges from exploring the effect of digital transformations on economic growth to how using digital technology has improved the quality of delivered services while improving sustainability.

Based on research by Al-Husban (2021) it was determined that the digital economy increases the overall efficiency of the economy through the reduction of costs associated with transactions and increased production and also that digital transformation is a significant factor supporting sustainable development within countries that are developing. A study by Kumar & Ayedee (2021) concluded that the use of digital technological tools leads towards a more financially inclusive society as well as to achieving equal opportunity through increased access to digital forms of financial services. Also, According to a report done by the OECD (2021) indicates that the development of the digital economy will be one of the major sources of world growth, along

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with increasing levels of investments made in technology; thus having a positive impact on productivity, innovation and competitiveness. According to the World Bank's report on Developing Countries Framework (2022), digital transformation is integral to improving government, education and health service delivery within developing countries and supporting economic development through sustainability.

Research carried out by (Bello et al. 2022) has demonstrated that mobile technology contributes to the creation of new jobs and decreases unemployment by focusing on support for entrepreneurial ventures and e-commerce businesses. The research conducted by the (United Nations 2022) demonstrates that economies dependent on digital technologies can respond more effectively to global financial downturns. (Al-Mamary & Shamsuddin 2022) found that the process of digitally transforming organisations can improve institutional performance and increase the efficiency of government services, particularly in countries that have established well-defined digital transformation strategies. Further research (Salahuddin & Gow 2022) also supports the finding of a significant relationship between internet penetration and economic growth in developing nations. Nuseir et al. (2023) conducted research about how the digital economy has contributed to developing both innovation and entrepreneurship, finding that when businesses use digital technology, they are able to grow into larger companies and sell their goods on a global scale. According to an IMF report (2023), the digital economy is becoming an essential component of building economic stability and improving the ability of national economies to withstand shocks.

A recent study (Abdulqadir & Hassan, 2023) on Iraq indicates that although there are still weak digital infrastructures and a lack of technical skills, great opportunities exist to advance the digital economy to support sustainable development. Another study (UNCTAD, 2024) reported that e-commerce and digital services are now among the most critical elements of the global economy; therefore, promoting investment into digital technology will lead to greater economic and social prosperity. Finally, the World Economic Forum (2024) concluded that Artificial Intelligence and Big Data are critical tools for enhancing sustainability and improving the efficiency of resources.

Numerous prior research studies provide evidence that the digital economy has a positive effect on achieving sustainable development through three main avenues: economic growth, innovation, and the provision of public services. However, there are barriers to realizing the full benefits of the digital economy, including inadequate infrastructure and legislation, as well as a lack of digital skills in many developing countries..

## **SECOND: THE THEORETICAL FRAMEWORK OF THE DIGITAL ECONOMY**

As a result of the technological revolution, there are now major changes happening across both social and economic spheres, which has led to the creation of a new type of economic system - called the Digital Economy - that utilizes all types of digital technologies (including communications and the Internet) to manage all types of economic activity (including production and services). The Digital Economy has become one of the biggest influences on the competitive advantage of both countries and institutions and is very important in terms of increasing the efficiency of production processes, stimulating innovation, improving trade facilitation and developing services.

With technological advances in information and communication technologies, the possibilities of using a digital economy (such as applying it to e-commerce), have grown beyond just these applications but also now include e-Government; E-Education, artificial intelligence; big data and others which have had a huge impact on changing how we view and interact within the global economy. This means that the digital economy has become a key part of sustainable economic growth/development along with making countries more competitive. (Ibrahim et al, 2025, 3-14)

### **1. The concept and characteristics of the digital economy:**

The digital economy crystallized from rapid advances in Information and Communication Technologies (ICT); it encompasses all economic activities that we engage in through digital means and new technology. While there are numerous definitions of the digital economy, they all share consensus that digital technologies are the main infrastructures through which we create and implement economic processes. The definition of the digital economy is given by (Li & Yue, 2025, 607-625):

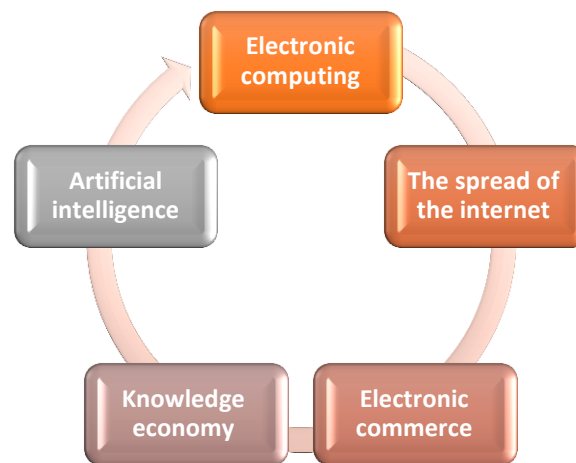
Digital Economy. An economy whose primary activity is to produce, distribute and/or exchange goods and services via the use of the internet, digital technologies and data rather than through traditional (e.g. manufacturing) means. It can also be defined as the group of all types of economic activities based on knowledge, digital technologies and current communication networks used to achieve economic value.

The digital economy encompasses various kinds of economic activities and is not restricted to a particular industry or sector (e.g., manufacturing, retailers, personal services, education, healthcare, finance, etc.). The evolution of the digital economy parallels numerous technological advancements over the last few decades in computing and communication (e.g. WWW and the internet). Developments in technology during the last 20 years have transformed how many products are produced and how goods are

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exchanged. The development of the digital economy has occurred through several stages; the most significant of which include:: (Nagle et al., 2025, 351-365)



**Figure 1. Stages of the emergence of the digital economy**

Source: by the author 2026.

The development of the Digital Economy: The Digital Economy developed through four stages; The first stage was based on Electronic Computers, which began what was called the use of Technology as a Tool in Economic Processes. The Second stage of Digital Economy growth came with the Expansion of the Internet, which enabled Global Communication and Information Sharing. After that, Electronic Commerce was Developed, which changed how We Buy and Sell; the Fourth stage of Development was based on Information and Knowledge, as well as on New Ideas (Innovation). And Finally, we find that Artificial Intelligence has created the highest level of Development, and has therefore Improved the Performance of Digital Technology Systems, and therefore Improved the Delivery of Economic Services and Processes, and has Continued to Improve Their Quality with both Intelligence and Flexibility. With Each of These Developmental Stages, the Digital Economy Has Become a Major Component of the Global Economy. The Digital Economy Has its Own Characteristics, Distinguishing It From the Traditional Economy, as Illustrated in the Following Table.:

**Table 1. Characteristics of the digital economy**

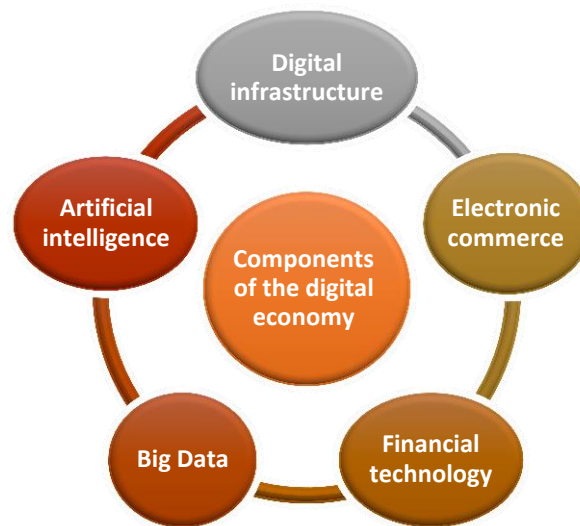
No.	Property	Illustration
1	Dependence on technology	The digital economy is based on modern technologies and the internet.
2	Speed and flexibility	Carry out economic operations quickly and efficiently.
3	Reduce costs	Reduce production and distribution costs.
4	Innovation	Encourage the development of products and services.

Source: by the author 2026.

Some of the characteristics defining the digital economy are abundant; it is identified as one of today's most significant types of modern day economies due largely to the heavy reliance upon varying forms of technology, including but not limited to, the Internet and intelligent systems utilized in performing various types of economic activity. Moreover, fast transaction times and efficient means of exchanging information and/or services are indicative of the speed and flexibility capabilities associated with the digital economy. Additionally, it serves to lower or reduce manufacturing/production, marketing and distribution costs for suppliers using digital means to support suppliers in those ways.

The digital economy relies heavily on knowledge and intellectual assets rather than traditional resources; this is why it supports ongoing growth both in product/service offerings, and because innovation is a cornerstone element of this type of economy. Furthermore, the growth of the digital economy allows for more accessibility and market reach (i.e., in terms of customers), while also breaking down geographic barriers through advanced communication networks and the internet that link together all individuals, institutions, and other entities or organizations that are part of the global economy (i.e., an interconnected digital economy). (Dokholyan, 2024, 101-109)

**2. Components of the digital economy:** Components of digital economy represent the basis of modern economic activity as a result of rapid developments in technology. Furthermore they assist efficiency, productivity, and service quality increase. Components of digital economy include various technologies and systems that are interrelated to support digital transformation throughout the economy. Figure 2 below outlines the primary components of the digital economy. These include digital infrastructure, e-commerce, financial technology, big data, and AI. All of these components work together to create a modern-day digital economy..



**Figure 2. Components of the digital economy**

Source: by the author 2026.

One of the key supporting elements of the modern economy is the digital economy. Components of the digital economy include telecommunications networks, the Internet, data centres, and computer systems that provide infrastructure for transferring information, enabling electronic services, and improving communication between economic institutions and sectors. E-commerce is another major application of the digital economy; e-commerce has created new markets, lowered marketing expenses, and provided simplicity to online purchases and payments made on the Internet.

Fintech is another major aspect as it relies on new technology to help provide banking and other financial services, like e-payments (electronic payments), digital wallets and e-banking. All of those services make for easier access to financial services and improve financial sector efficiency. Big data is another key component to the digital economy because it allows for the analysis of data, the forecasting of economic trends, and assistance with decision-making and strategic planning. The last key technological part to digital is AI, which is considered by many to be the highest level of technology, because it provides businesses with the ability to analyze data, automate processes, improve productivity, and provide smart services in multiple types of economic and service areas..

### 3. Objectives and importance of the digital economy:

**1.3. Objectives of the digital economy:** the digital economy seeks to achieve a set of goals, the most prominent of which are: (Dokholyan, 2024, 101-109)

- Promoting economic growth.
- Raising the efficiency of production and services.
- Support innovation and development.
- Improving the quality of services.
- Promote financial inclusion.
- Increased economic competitiveness.
- Creation of new job opportunities.

**2.3. The importance of the digital economy:** the importance of the digital economy is manifested in several aspects, the most important of which are: (Nagle et al., 2025, 351-365)

- Supporting economic growth: the digital economy contributes to increasing GDP and stimulating investments.
- Improve efficiency: helps reduce time and costs and improve corporate performance.

- Promote innovation: the digital economy encourages the development of smart solutions and modern technologies.
- Service development: contributes to improving the quality of educational, health and financial services.
- Promoting financial inclusion: provides financial services to wide segments of society through digital applications.

**4. Challenges of the digital economy:** despite the great advantages provided by the digital economy, its application faces many challenges, the most prominent of which are: (Ibrahim, 2016, 142- 145)

\* Weak digital infrastructure: many developing countries suffer from weak internet and communication networks.

\* Digital divide: there are significant differences between countries and societies in the level of access to technology.

\* Lack of digital skills: digital economy applications need human cadres with advanced technical skills.

\* Cyber threats: the risks of cyber intrusions and digital crimes are increasing with the expansion of the use of technology.

\* Weak legislation: some countries suffer from a lack of laws regulating digital transactions.

\* High costs of digital transformation: the transition to a digital economy requires significant investments in infrastructure and modern technologies.

**Table 2. Comparison of the traditional economy and the digital economy**

No.	Element	Traditional economics	Digital economy
1	Business style	Traditional	Electronic
2	Transaction speed	Relatively slow	Quick
3	Market Scope	Local	My world
4	Basic dependence	Material resources	Knowledge and technology

Source: by the author 2026.

The digital economy has transformed how an economy operates over the last few decades, with the advent of digital technologies and new ways that business perform different functions. The digital economy also provides more efficiency and flexibility compared to a traditional economy. While there are many benefits associated with operating in a digital economy; the use of a digital economy presents its own challenges such as the need for infrastructure investments, skill development, and legislative changes to match with the overall movement towards a global digital economy..

### **THIRD: SUSTAINABLE DEVELOPMENT AND ITS RELATIONSHIP TO THE DIGITAL ECONOMY**

Over the past few decades, many nations around the world have experienced heightened levels of interest in sustainability because of issues they have been undergoing economically, socially, environmentally, etc; such as poverty, unemployment, pollution of the environment, depletion of natural resources. Achieving sustainability has become a strategic priority for most government agencies and multilateral organizations as a means to create jobs and enhance living conditions while maintaining resources for future generations.

The advancements in technology over the past few decades have created an ever-increasing digital economy that is viewed as one of the key instruments utilized to help achieve the Sustainable Development Goals through innovation, enhanced utilization of resources, the development of services, and enhanced access to both knowledge and technology. As a result, the interplay between the digital economy and sustainable development are of particular interest to both researchers and policymakers..

#### **1. The concept of sustainable development and its dimensions**

**1.1. The concept of sustainable development:** the concept of Sustainable Development appeared clearly in the report of the Brundtland Commission issued by the United Nations in 1987, which defined sustainable development as: Development that meets the needs of the present without compromising the ability of future generations to meet their needs. This concept refers to the need to achieve a balance between economic growth, social development and environmental conservation, ensuring the continuity of development in the long term. (Liu et al., 2024, 307-324)

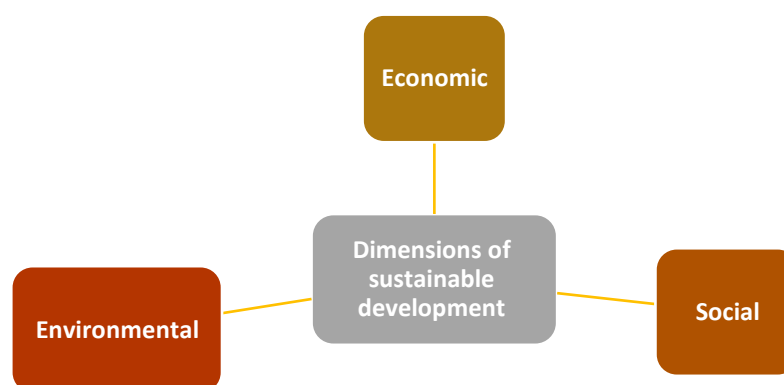
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Sustainable development is defined as: "a comprehensive development process aimed at improving the quality of economic, social and environmental life in a balanced and sustainable manner."

**2.1. Sustainable Development Goals:** the United Nations has identified a set of Sustainable Development Goals that countries are striving to achieve by 2030, the most prominent of which are:

- Achieving social welfare through the eradication of poverty and hunger and improving the level of Health and educational services to contribute to raising the quality of life and Human Development.
- Promoting justice and equality by reducing social disparities, achieving gender equality and expanding opportunities for economic and social participation.
- Support sustainable economic growth by providing decent employment opportunities, promoting investment, Developing Industry, Innovation and modern technology.
- Protecting the environment and achieving environmental sustainability by supporting the use of clean energy, reducing pollution and climate change, and conserving natural resources.
- Strengthening international cooperation and partnerships to support sustainable development and exchange experiences and resources to achieve common development goals.

**3.1. Dimensions of sustainable development:** sustainable development depends on three main interrelated dimensions, as shown in the following figure:



**Figure 3. Dimensions of sustainable development**

Source: by the author 2026.

- **Economic dimension:** the economic dimension of Sustainable Development focuses on achieving continuous economic growth, improving production and income levels, as well as providing employment opportunities and promoting the efficient use of economic resources in a balanced manner. This dimension also aims to raise economic growth rates, reduce unemployment, encourage investment in various sectors, as well as achieve economic stability that contributes to supporting long-term development and improving the level of economic and social well-being of society.
- **Social dimension:** the social dimension of Sustainable Development focuses on achieving social justice and improving the standard of living of individuals through the provision of basic services such as education, health and housing. It also focuses on reducing poverty and reducing social disparities, as well as supporting human development and improving the quality of life, which contributes to building a more stable and balanced society and the ability to achieve sustainable development.
- **Environmental dimension:** the environmental dimension of Sustainable Development focuses on protecting the environment and conserving natural resources through rationalizing their use and reducing pollution in various forms. It is also concerned with supporting the use of clean energy and reducing environmental emissions, as well as confronting climate changes that affect the sustainability of resources and quality of life, in order to ensure balanced development for current and future generations. (Luo et al., 2023, 1847-1871)

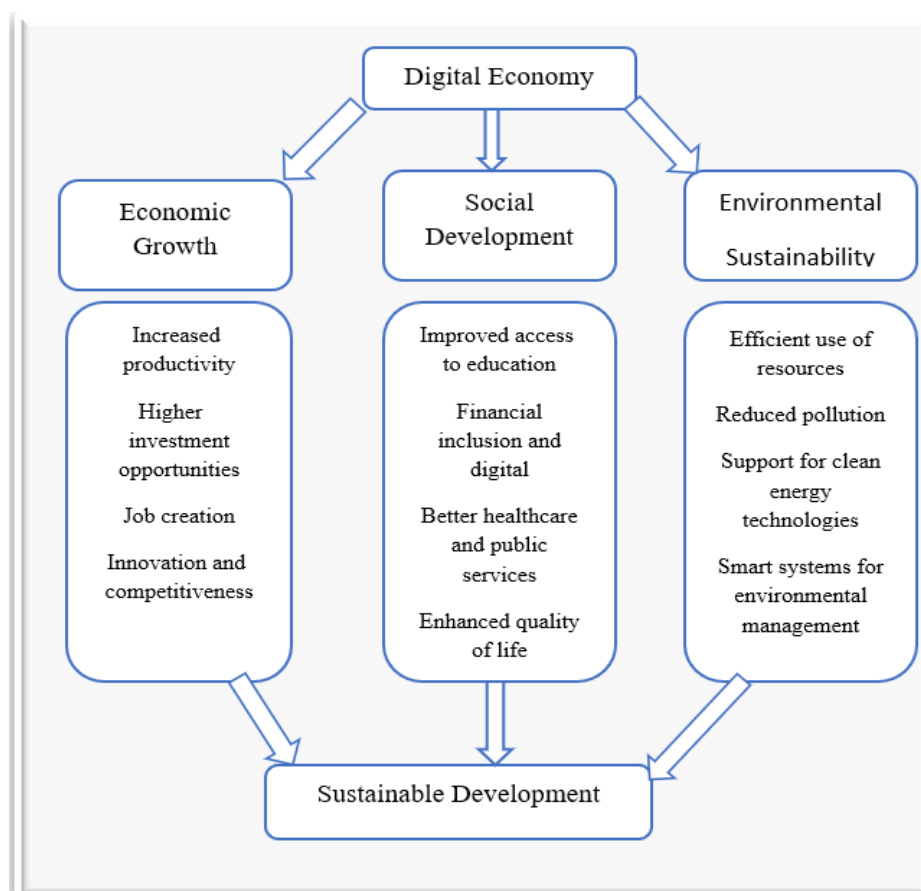
**2. The relationship between the digital economy and sustainable development:** the relationship between the digital economy and sustainable development is one of the recent topics that has received increasing attention, given the role of digital technology in supporting economic growth, improving services and enhancing the efficiency of resource use. The digital economy also contributes to achieving the economic, social and environmental dimensions of sustainable development through innovation and digital transformation. (Herman, 2022, 1682)

**Table 3. The impact of the digital economy on Sustainable Development**

No.	Sphere of influence	The impact of the digital economy
1	Economic growth	Raise productivity and increase investments.
2	Social development	Improve education, health and services.
3	Environmental sustainability	Reduce resource consumption and emissions.

Source: by the author 2026.

Various dimensions of sustainable development are directly supported by the digital economy through its multiple applications, according to the table. E-commerce boosts investment and stimulates economic growth from a monetary perspective. E/Education and e-healthcare services both improve social aspects of living and raise the standards of individuals' quality of life. Smart systems rationalize resources used within the environment and lessen negative impacts on the environment as well. Electronic financial services, such as digital wallets, are another way to promote financial inclusion and make it easier to complete economic transactions leading to sustainable development in a holistic approach..



**Figure 4. Relationship between Digital Economy and Sustainable Development**

Source: by the author 2026.

The digital economy significantly supports sustainable development through its direct impact on all three pillars: the economy, society, and the environment. Economically, the digital economy has enhanced productivity, reduced operating costs, increased enterprise efficiency, enhanced e-commerce, and attracted technological investment which has facilitated the activation of markets and increased the rate of economic growth. Socially, digital technologies have helped improve education and healthcare access, support e-learning, enhance financial inclusion, and create new job opportunities. Furthermore, they have helped people communicate and share knowledge, thereby reducing the knowledge gap and improving the level of human development. The digital economy is now a significant way to achieve environmental sustainability from an environmental perspective by: - Reducing the use of paper and other traditional materials - Increasing energy efficiency - Building smart cities - Using digital technologies to manage our natural resources - Helping cities reduce pollution and emissions through greener

options to drive, such as through walking, cycling, and using public transport. All these things are helping cities develop sustainably and provide more balance with each other..

**3. Applications of the digital economy in support of sustainable development:** applications of the digital economy represent A significant component of advancing sustainable development via the application of modern technologies to facilitate greater success in economic, social, and environmental areas is digital solutions (digital applications). Digital solutions also play a critical role in the advancement of government, education, finance, health services, and many other fields. As well as improving efficiency and productivity through the use of mission-generated data, digital solutions will help facilitate innovation and provide support for more effectively achieving the Sustainable Development Goals.

E-Government is a widely recognized aspect of the digital economy, where digital technology enables governments to deliver services to citizens in a more efficient and timely manner. In addition to providing improved public service quality, they also have a positive impact on reducing administrative corruption, increasing transparency, expediting governmental processes, and simplifying official transactions.

E-learning has emerged as an important instrument in helping achieve sustainable development within the education sector. E-learning enables readily available learning opportunities while lowering costs associated with education. In addition, e-learning has enabled a greater degree of continuous learning and can be delivered in a more flexible manner than traditional learning methods that are compatible with today's technological advancements. (Mohamed, 2022, 13-25)

E-Commerce contributes to the activation of markets, increases the number of investment opportunities, provides support to small and medium-sized enterprises, and helps facilitate buy and sell transactions. Digital Financial Services - electronic payments, digital wallets, and e-Banking - are furthering the promotion of financial inclusion, facilitating transactions, and supporting economic activity..

**4. Challenges of employing the digital economy in sustainable development:** despite the importance of the digital economy, there are many challenges facing its employment in achieving sustainable development, the most prominent of which are:

- Weak digital infrastructure: some countries suffer from weak internet networks and technical services.
- Digital divide: there are significant disparities between countries and regions in access to digital technology.
- Lack of technical skills: the digital economy requires qualified human cadres capable of dealing with modern technologies.
- Security threats: the risks of cybercrime and cyber-attacks are increasing with digital expansion.
- Weak digital legislation: countries need to develop laws that regulate digital transactions and protect data and information.
- High costs of digital transformation: digital transformation requires significant investments in infrastructure and technology.

It is clear that sustainable development is a global goal that seeks to achieve a balance between the economic, social and environmental dimensions, and that the digital economy has become one of the most important modern tools that contribute to achieving this goal. The digital economy helps to boost economic growth, improve services, support innovation and reduce environmental impacts, but taking full advantage of it requires addressing challenges related to infrastructure, digital skills and technical legislation. (Ibrahim et al., 2024, 1-17)

## **FOURTH: ANALYSIS AND PRACTICAL APPLICATION.**

The growing importance of the digital economy is one way that nations support their desire for sustainable development, as it provides many opportunities for economic, social and environmental improvements. As a result, the ongoing development of digital technology has brought about major shifts in the economic and service sectors while also providing a significant impact on enterprise efficiencies, increasing growth rates and improving service quality.

Sustainable Development has, at its core, both economic growth & social equity while protecting the natural world. These goals create an opportunity for using the digital economy as an instrument to assist in achieving these sustainable development (SD) benefits. This chapter will analyze how the digital economy contributes to achieving sustainable development (SD), with an emphasis on the economic, social, and environmental implications of the transition to a digital economy, and the challenges for developing countries in implementing this transformation..

### **1. Analysis of the impact of the digital economy on Sustainable Development**

**1.1. The impact of the digital economy on economic growth:** The digital economy clearly contributes to enhancing economic growth by increasing the efficiency of production processes, improving resource management and reducing operational costs.

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Digital technologies also help speed up economic transactions and facilitate trade and investment processes, which leads to increased productivity and improved competitiveness of national economies.

The digital economy has helped the emergence of new economic activities based on technology and innovation, such as e-commerce, smart services and teleworking, diversifying sources of income and stimulating digital investments.

The digital economy also contributes to supporting small and medium-sized enterprises by providing electronic platforms that help them access local and global markets, which enhances economic growth opportunities and increases employment rates.

**2.1. The impact of the digital economy on social development:** The digital economy helps to achieve social development by improving access to basic services, such as education, health and government services.

In the field of education, digital technologies have contributed to the expansion of e-learning opportunities and the provision of knowledge in a flexible manner, which has helped to reduce the educational gap and improve the quality of Education.

In the health sector, digital technology has helped to develop e-health services, improve health information systems and facilitate communication between patients and health institutions.

The digital economy also contributes to enhancing financial inclusion through electronic banking services and digital wallets, which helps to integrate large segments of society into the formal financial system.

**3.1. The impact of the digital economy on environmental sustainability:** The digital economy contributes to enhancing environmental sustainability through the use of smart technologies that help to rationalize resource consumption and reduce environmental emissions. The most prominent positive environmental aspects of the digital economy are:

- Reduce the use of paper by switching to electronic transactions.
- Reduce traditional mobility through work and distance education.
- Improved energy management using smart systems.
- Support the use of renewable energy and clean technologies.

Digital technology also helps to control pollution and manage natural resources more efficiently, contributing to environmental protection and sustainable development.

## 2. The reality of the digital economy in developing countries

### 2.1. The development of the digital economy in the Arab countries.

In recent years, many Arab countries have witnessed an increasing interest in digital transformation, through the development of telecommunications infrastructure and the expansion of the use of electronic services. Some Arab countries have launched national digital transformation strategies with the aim of:

- Promoting the digital economy.
- Development of e-government services.
- Support innovation and entrepreneurship.
- Attracting technological investments.

Despite this development, there are still disparities between Arab countries in the level of digital readiness and technical infrastructure.

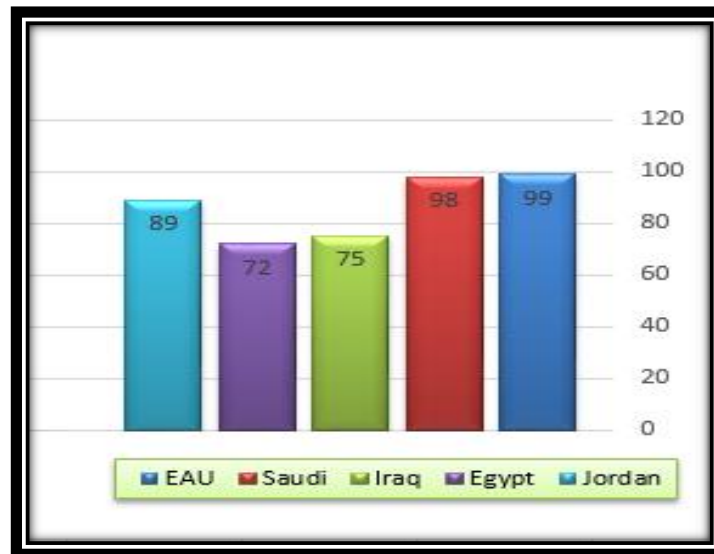
**Table 4. Indicators of the digital economy in some Arab countries**

No.	Countries	Percentage of internet users %	Electronic payment ratio %	E-government index
1	Emirates	99	78	Too high
2	Saudi Arabia	98	70	High
3	Iraq	75	25	Medium
4	Egypt	72	32	Medium
5	Jordan	89	45	relatively high

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Source: by the author 2026.

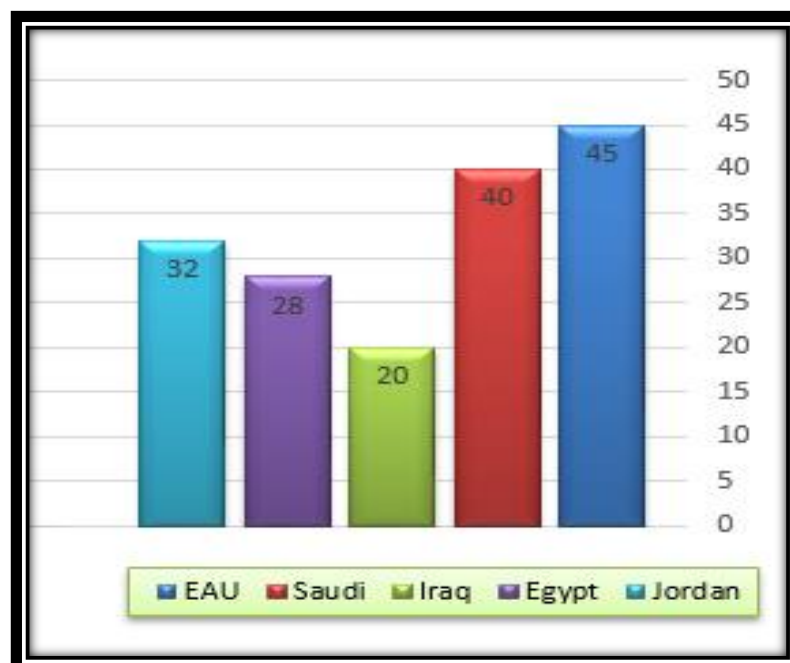
There is a significant difference in the development of the Digital Economy across the Arab countries as evidenced by the developing Digital Infrastructure in UAE and Saudi Arabia where there is a high rate of internet use, widespread electronic payments and a high E-Government index compared to those of countries like Iraq and Egypt which face challenges associated with limited digital service access and an under-reliance on electronic transaction use impacting the pace of digital transformation and achieving sustainable growth. Furthermore results illustrate a correlation between Digital Economy Development, service efficiency improvement and economic activity enhancement..



**Figure 5. The development of internet usage in some Arab countries (%)**

Source: by the author 2026.

The figure shows the high rates of internet usage in the Arab countries, especially in the UAE and Saudi Arabia, reflecting the development of digital infrastructure and the spread of electronic services. In contrast, some developing countries such as Iraq and Egypt are still recording relatively lower percentages, which indicates the continued need to develop the telecommunications sector and promote digital transformation.



**Figure 6. The growth rate of e-commerce in the Arab countries (%)**

Source: by the author 2026.

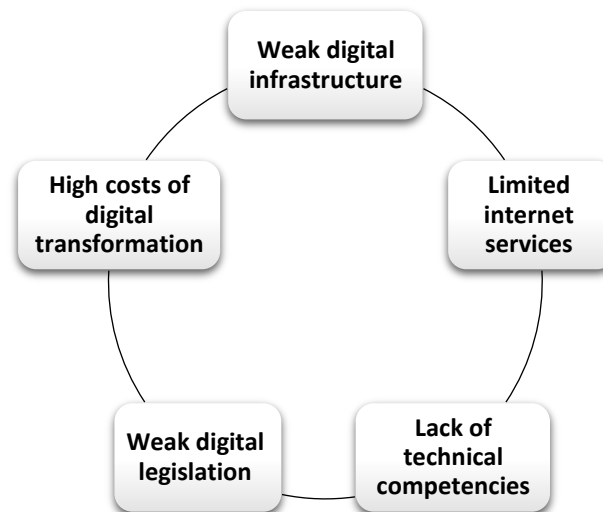
The figure shows that there is an increasing growth in e-commerce within the Arab countries, as a result of the spread of digital technology and the expansion of the use of smartphones and electronic payment methods. It is also clear that countries with

a developed digital infrastructure are achieving higher rates in e-commerce, which enhances economic activity and digital investments.

**2.2. The reality of the digital economy in Iraq:** In recent years, Iraq has started to move towards digital transformation through the development of some electronic services and the expansion of the use of technology in government and banking institutions. The most prominent manifestations of the digital economy in Iraq are:

- The spread of electronic payment.
- Use of digital banking services.
- Expansion of e-commerce.
- Application of some e-government services.

However, the digital economy in Iraq still faces many challenges, such as:



**Figure 7. The challenges facing the digital economy in Iraq**

Source: by the author 2026.

The chart shows the top barriers in implementing the digital economy: poor digital infrastructure and limited internet service levels -- which restricts the effectiveness of digital transformation and limits growth and usage of digital services. Also included in this chart are limited technical skills and weak legislation pertaining to the digital environment, which hinders regulation and protection of the digital environment. The high costs of digital transformation are also driving many companies, especially developing countries as well, to be prevented from using technology for sustainable development..

**Table 5. Proposed recommendations for strengthening the digital economy**

No.	Recommendation	Objective
1	Digital infrastructure development	Improving the efficiency of electronic services.
2	Promoting digital training	Raising technical skills.
3	Development of legislation	Organization of the digital environment.
4	Support innovation	Promote sustainable development.

Source: by the author 2026.

## **FIFTH: DISCUSSION OF THE RESULTS.**

The results from both theoretical analysis and applied analysis show that the digital economy has a positive effect on achieving sustainable development. Therefore, it confirms the main hypothesis of the study, that there is a significant relationship between the digital economy and sustainable development. Digital transformation contributes directly to the improvement of economic development through increased productivity, improved efficiency of institutional performance, reduced operational costs as well as its role in supporting innovation and raising the competitiveness of enterprises. The results of this study also supported previous research about how the digital economy contributes to improving service quality. The results showed how

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using digital technology resulted in advancements in the delivery of the education, health and finance sectors and improving access to these services, had positive implications for social development, enhancing financial inclusion and reducing the knowledge divide between individuals and communities.

The results have indicated that the application of digital technologies can help rationalise resource consumption and cut down on traditional techniques which have a sizable environmental impact, thereby further confirming the validity of the study's hypothesis regarding the role of the digital economy in providing support to environmentally sustainable development. The study also uncovered a number of obstacles to the full implementation of the digital economy, primarily in developing nations, such as under-developed digital infrastructure, inadequate skills and knowledge regarding technical competencies, and ineffective legal frameworks for digital transformation. Overall, these findings provide evidence of the need for policies and strategies to support the development and implementation of digital transformation, which will ultimately increase its contribution towards achieving the Sustainable Development Goals (SDGs) in the long run.

## SIXTH: RESULTS AND RECOMMENDATIONS.

Presenting the results and recommendations is one of the most important stages of scientific research, as it contributes to clarifying the most important conclusions reached by the study related to the digital economy and sustainable development. The recommendations also help in providing practical proposals that can be used to promote digital transformation and address the challenges facing achieving sustainable development in light of modern technological developments.

**1. Results:** the research has reached a set of results, the most important of which are:

- The study showed that the digital economy represents one of the modern pillars supporting economic growth and sustainable development, because it provides opportunities to develop economic activities and improve the efficiency of institutional performance in various sectors.
- The results showed that digital transformation contributes to reducing operational costs, promoting innovation and creating new jobs, as well as raising the competitiveness of enterprises and improving economic productivity.
- The study confirmed that the digital economy helps to improve the quality of educational, health and financial services, through the use of modern technologies and expanding access to electronic services more efficiently and flexibly.
- The study found that the digital economy plays an important role in enhancing financial inclusion and expanding the use of digital banking services, in addition to its contribution to supporting environmental sustainability by rationalizing resource consumption and reducing environmental impacts.
- The results revealed a positive relationship between the digital economy and sustainable development, but developing countries still face multiple challenges, most notably weak digital infrastructure, lack of technical skills and legislation related to digital transformation.

**2. Recommendations:** based on the results of the research, the following recommendations can be made:

- Working on the development of digital infrastructure and improving internet and communication services, while supporting digital transformation programs in government and private institutions to contribute to raising the efficiency of performance and expanding electronic services.
- Promote investment in modern technology and digital innovation, while encouraging SMEs to adopt digital solutions to support economic growth and increase competitiveness.
- Developing legislation and laws related to the digital economy and cyber security, to ensure the provision of a secure and organized digital environment that supports electronic transactions and protects data and information.
- Spreading digital culture and developing technical skills through supporting e-learning and digital training in line with the requirements of the labor market and the transition towards the digital economy.
- Promoting financial inclusion and expanding the use of digital financial services, while supporting cooperation between the public and private sectors and benefiting from successful international experiences in the field of digital economy and sustainable development.

## CONCLUSION

The result of this research study demonstrated that the digital economy in today's world is an essential variable in shaping global economic growth, enhancing the performance of businesses, enabling the creation of new ideas and improving the delivery of services. Furthermore, the digital economy has proven to be an effective mechanism through which to promote sustainable development by helping to stimulate economic growth, by helping create opportunities for social development and by supporting environmentally-friendly practices.

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The digital economy provides numerous benefits, however, there are challenges to implementing the digital economy, particularly for developing countries. In order to become fully integrated into the digital economy improvements in digital infrastructure, enhancement of technical skills and a review and update of laws will be required.

Thus, the extent to which nations can opt into the digital economy and leverage new technology for economic, social, and environmental sustainability today is directly correlated to how successfully we will reach future sustainable development milestones..

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