"SUSTAINABLE GREEN ECONOMIC DEVELOPMENT AND DIGITAL INNOVATIVE SOLUTIONS BASED ON SMART TECHNOLOGIES"

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https://doi.org/10.5281/zenodo.15349878

Abstract:

This article analyzes the global value of the digital economy and its growth rates. The article also highlights the problems and barriers associated with the growth of the digital economy, including technological, financial, and social barriers. Additionally, it discusses the importance of collaboration between the public and private sectors, as well as the necessary measures to promote digital transformation and ensure sustainable development. The article presents comprehensive insights into the future of the digital economy and its socio-economic impacts, which are crucial for creating a sustainable and eco-friendly environment for future generations.

Keywords: Digital economy, Green economy, Growth rate, Global value, Transformation, Technological barriers, Financial barriers, Social barriers, Collaboration, Sustainable development, Eco-friendly environment

Annotatsiya:

Ushbu maqola raqamli iqtisodiyotning global qiymati va uning o'sish sur'atlari tahlil qilinadi. Maqola, raqamli iqtisodiyotning o'sishi bilan bog'liq muammolar va to'siqlarni ham yoritadi, jumladan, texnologik, moliyaviy va ijtimoiy to'siqlarni. Shuningdek, davlat va xususiy sektor o'rtasida hamkorlikning ahamiyati, raqamli transformatsiyani rag'batlantirish va barqaror rivojlanishni ta'minlash uchun zaruriy chora-tadbirlar ko'rsatib o'tiladi. Maqola, raqamli iqtisodiyotning kelajagi va uning ijtimoiy-iqtisodiy ta'siri haqida keng qamrovli fikrlarni taqdim etadi, bu esa kelajak avlodlar uchun barqaror va ekologik toza muhit yaratishda muhim ahamiyatga ega.

Kalit so'zlar. Raqamli iqtisodiyot, Yashil iqtisodiyot, O'sish sur'ati, Global qiymat, Transformatsiya, Texnologik to'siqlar, Moliyaviy to'siqlar, Ijtimoiy to'siqlar, Hamkorlik, Barqaror rivojlanish, Ekologik toza muhit

Аннотация:

В этой статье анализируется глобальная стоимость цифровой экономики и ее темпы роста. Также в статье освещаются проблемы и барьеры, связанные с ростом цифровой экономики, включая технологические, финансовые и социальные барьеры. Кроме того, обсуждается важность сотрудничества между государственным и частным

секторами, а также необходимые меры для содействия цифровой трансформации и обеспечения устойчивого развития. Статья представляет собой всесторонний обзор будущего цифровой экономики и ее социально-экономического влияния, что имеет решающее значение для создания устойчивой и экологически чистой среды для будущих поколений.

Ключевые слова: Цифровая экономика, Зеленая экономика, Темп роста, Глобальная стоимость, Трансформация, Технологические барьеры, Финансовые барьеры, Социальные барьеры, Сотрудничество, Устойчивое развитие, Экологически чистая среда

Introduction

The relationship between digital technologies and the green economy has become more important than ever in today's modern world. This article explores the development of the green economy through digital technologies and discusses innovative solutions. Digital technologies offer opportunities to advance the green economy, conserve resources, and solve environmental problems. Technologies such as cloud computing and artificial intelligence are creating new possibilities for the green economy. Meanwhile, the green economy promotes sustainable development, environmental protection, and efficient resource use.

Development of the Green Economy through Digital Technologies

The connection between digital technologies and the green economy is of great significance in the modern era. Through the use of digital technologies, it is possible to develop the green economy, conserve resources, and address ecological challenges. For example, digital technologies help optimize the use of energy and water resources. IoT devices allow for better monitoring and reduction of energy consumption, as well as water conservation.

In 2021, the global digital economy was valued at approximately $4.9 trillion and is growing at a rate of 10% annually. In Uzbekistan, the volume of digital services reached 21 trillion UZS ($1.66 billion), with more than 100 digitalization projects underway. Projects like MyID and UzFace have enabled biometric identification for over 10 million users.

Globally, the digital economy is expected to reach $11.8 trillion by 2023, according to a report by Forrester. By 2028, this figure is projected to grow to $16.5 trillion, representing an average annual growth rate of 6.9%. Key sectors include online retail (with 9% annual growth) and travel services (7% annual

growth). The United States and China dominate the digital economy, accounting for nearly two-thirds of its total volume.

According to other sources, the digital transformation market surpassed $1 trillion in 2023 and is expected to reach over $4 trillion by 2032, with a compound annual growth rate of 17.2%.

Impact of Digital Technologies on the Economy

Technology	Impact	Solution
Intelligent Transport Systems	Cost reduction	20% decrease (World Economic Forum)
Electric Vehicles	Emission reduction	15% of global car sales (BloombergNEF)
IoT Devices	Resource optimization	10–30% reduction in energy use (McKinsey)
Big Data Analytics	More efficient management	25% reduction in logistics costs (DHL)

By optimizing logistics processes with digital technologies, the efficiency of supply chains can be increased, reducing both costs and time. Digital logistics solutions can lower expenses by up to 25%.

Renewable Energy Sources

The use of solar and wind energy has become more efficient through digital systems. Automation and monitoring of energy production improve energy efficiency. Energy management systems can reduce energy consumption by 10–30%. In 2020, renewable energy accounted for 29% of global energy consumption. This highlights the role of automation in improving energy efficiency.

Transport and Logistics

Environmentally friendly transport systems are being developed through digital solutions. Intelligent transport systems optimize traffic and reduce emissions. For instance, transport costs can be cut by 20% using smart transportation systems (World Economic Forum). Electric vehicles made up 15% of global car sales in 2023 and continue to grow annually (BloombergNEF).

ITS (Intelligent Transport Systems) help manage and monitor traffic, reducing costs and increasing road safety. EVs (Electric Vehicles) are crucial for lowering emissions and optimizing energy use.

Reducing Emissions

The transportation sector contributes 14% of global emissions. Digital technologies can help reduce this. Smart transport systems and EVs can decrease transport emissions by up to 30% (IEA). These technologies also reduce costs and environmental impact.

Digital technologies can enhance urban infrastructure, reduce energy consumption, and increase green spaces. In agriculture, digital solutions can improve productivity and minimize ecological impact—for instance, smart irrigation systems help save water and increase yield.

Green finance tools and the channeling of investments toward environmental projects are also enabled by digital technologies, further supporting the development of a green economy.

Challenges and Barriers

Several technological, financial, and social challenges hinder the implementation of digital technologies:

- **Infrastructure Deficiencies**: Many developing countries lack the digital infrastructure (broadband internet, data centers) needed for digital transformation.
- **Lack of Technological Knowledge**: Employees and managers often lack the skills required to effectively use digital technologies, hindering innovation.

Financial barriers include:

- **Investment Deficiencies**: Small and medium-sized enterprises often struggle to secure the investments needed for digital transformation.
- **Market Instability**: Economic fluctuations make it difficult to ensure stable investment in digital technologies.

Social barriers include:

- **Public Resistance**: Users and the public may be hesitant to adopt new digital solutions.
- **Digital Divide**: The unequal access to digital technologies among different social groups can lead to further inequality.

Solutions:

- **Investment and Funding**: Governments should collaborate with the private sector to mobilize financial resources for digital projects.
- **Education and Training**: Programs aimed at developing digital skills are essential.
- **Legislation and Regulation**: Effective legal and regulatory frameworks should be created to support digital transformation.

Conclusion

The challenges and barriers in implementing digital technologies limit their effective use. Overcoming these challenges requires strong cooperation between the public and private sectors. This collaboration can accelerate digital transformation and support the growth of the green economy.

The future of digital technologies and the green economy are closely linked. Applying digital technologies to develop the green economy creates opportunities for environmental sustainability and efficient resource use. Innovative solutions play a crucial role in this process.

Digital implementation is a foundational aspect of the modern economy and plays a key role in advancing the green economy. However, it faces numerous obstacles—technological, financial, and social. Issues such as lack of infrastructure, limited knowledge, investment difficulties, and societal resistance hinder progress.

To overcome these problems, strong public-private partnerships are essential. Stable financial relations between the government and private sector are needed to fund innovative projects. Educational programs must be developed to enhance digital skills. Supportive laws and regulations should be established to encourage digital transformation.

Successfully implementing digital technologies not only accelerates economic growth but also ensures environmental sustainability. These technologies help improve resource efficiency, optimize energy consumption, and reduce emissions. Thus, cooperation between the government and private sector is vital for accelerating digital transformation and contributing to a sustainable and eco-friendly future for the next generations.

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