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The Role of Digitalization in Economic Growth: Experience of Uzbekistan

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Abstract: With an emphasis on Uzbekistan, the study investigates how digitization promotes economic growth. The precise effects of digitalization elements on economic development are still not well understood, despite the rising body of research on digital economies. Using data from 2010 onward, the study used multiple linear regression to close this gap, looking at variables including software and information services and innovation spending. Information services and GDP growth were found to be strongly positively correlated, but software services had the opposite effect. Spending on innovation had a small but beneficial impact. According to the study, improving digital infrastructure and expanding internet adoption are essential for long-term economic growth, especially in emerging nations like Uzbekistan.

Keywords: Digitalization, Digital Economy, Economic Growth, Digital Divide, Digital Intelligence

1. Introduction

In fact, there is no single definition of the concept of sustainable development, because this concept can be applied to all subjects. The main essence of sustainable development is that the goals of a particular party should take into account the goals of the interested party and lead to the establishment of a long-term, balanced relationship between them [1]. The term "sustainable development" was proposed for the first time in 1980 by the International Union for Conservation of Nature and Natural Resources in the "Global Strategy for Nature Conservation" report. According to him, sustainable development is the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development aims to respect the earth's resources by protecting nature, economic prosperity and social cohesion. Sustainable development by the UN was the basis for the adoption of the 2030 agenda, which sets the global goal of ensuring the well-being of people while protecting the earth. According to it, a total of 17 Sustainable Development Goals (SDGs) were developed, divided into 169 economic, social and environmental goals, each of which is aimed at solving the main problems of the 21st century and ensuring better development.

Speaking of digitalization, about the information society The first signs of the emergence of the information society are associated with the development of the first digital programs at the beginning of the 20th century. According to T. Ritter, the earliest form of electronic government in the administration of the country was used in 1935 in order to support the social security law in the registration of labor records of US citizens [2].

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Since the 1970s, microelectronics, the Internet, information and telecommunication tools have served as a vector of technological development, and since the 2010s, according to many scientists, the sixth technological revolution (Industry 4.0) based on a completely new scientific theory has taken place [3]. These are fields such as biotechnologies, new medicine, robotics, nanotechnologies, cognitive technologies, high humanitarian technologies, and a new environmental management system, all of which serve more people than the previous technological economic system.

The word "digital economy" was first used in the 1990s by D. Tapscott and N. Negroponte's scientific work. According to Tapscott, the driving factor of the economy was previously based on the milk of humanity, but in the new digital economy, this factor is based on human consciousness, that is: "Innovation is more important than having resources, factories and capital" [4]. Still, Tapscott doesn't deny the challenges the new economy could bring.

In his scientific article, N. Negroponte compares industrial, informational and post-informational periods of development and thinks about the digital system in which the number of bits storing information will increase in the future. According to his analysis, in the digital world, it will be possible to be and work in several places at the same time, and the concept of "address" will have a new meaning [5]. At the beginning of the 21st century, the scientific research analysis of digitization is showing its results.

E. Bryndjolfson and B. Kakhin stated that the "information economy" is a process of increasing information and knowledge-based assets used in agriculture, mining and manufacturing industries, which is becoming a broad and long-term trend. "Digital economy is an ongoing and unfinished transformation of all sectors of the economy through the digitization of information with the help of computer technologies" [6]. In their scientific works, the authors talked about the process that goes beyond the boundaries of current economic concepts. E. Bryndjolfson and B. Kakhin analyze the opportunities of the Internet in the field of commerce and emphasize that e-commerce is a phenomenon related to the digital economy.

In conclusion, the existing literature shows that there is a strong positive relationship between digitization and economic growth. However, since the concept of digitization is broad, it is a matter of urgency to determine exactly which factors have a stronger impact on economic development and how to properly apply it. Therefore, further research on digitization is important.

2. Materials and Methods

The research period covered the period from 2010 to the present using the open data section of the official website of the State Statistics Committee of the Republic of Uzbekistan. Multiple linear regression was used for analysis. First, all the necessary information was brought into the form of a table. A scatter plot was created for visual analysis of the relationship between variables. The least squares (OLS) method was used to construct the regression model. Linear regression is calculated using the following formula:

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

where: y is the volume of gross domestic product,

X_1 – volume of information services of enterprises and organizations,

X_2 – volume of software services,

X_3 – expenses on innovation,

β_0 is a independent index,

$\beta_1, \beta_2, \beta_3$ are regression coefficients,

e is an error.

The analysis was conducted under conditions of significance level of 0.05 and confidence level of 0.95.

3. Results

The results of the analysis showed that the coefficient of determination (R^2) of the model is 0.993, which indicates that there is a high degree of correlation between the independent variable and the dependent variable (y).

Table 1. Regression analysis results

<i>Regression statistics</i>	
Multifactor R	0,996366609
R-squared	0,992746419
Normalized R-squared	0,879217448
Standard error	35095,91714
Number of observations	13

The correlation-regression analysis equation looks like this:

$$Y=58.68 \cdot X_1 - 85.67 \cdot X_2 + 2.71 \cdot X_3 - 65485.63$$

As a result of the analysis, it was found that a 1% increase in the volume of information services of enterprises and organizations leads to an increase in GDP by 0.58%, which indicates that there is a sufficiently positive relationship between these indicators. A 1% increase in the volume of software-related services, however, was found to have an unexpected negative impact on GDP, suggesting the importance of further analysis. It was found that innovation costs also have a positive effect on GDP growth, that is, a 1% increase in innovation costs leads to a 0.02% increase in GDP. But the correlation of the last factor with GDP is low, and the result is not significant enough, and it creates the need to study the influence of other factors. Therefore, we examined the effect of the fourth independent variable on the size of GDP. The number of Internet users per 100 inhabitants was selected as a free variable. The result of the regression analysis was as follows:

$$Y=16444.31 \cdot X_4 - 224928.53,$$

where: Y – GDP volume (billion soums),

X_4 is the number of Internet users per 100 inhabitants.

The results of the next regression analysis showed that an increase in the number of subscribers connected to the Internet by 1 unit per 100 people leads to an increase in GDP by 16444.31 billion soums. Or a 1% increase in the number of subscribers connected to the Internet per 100 people leads to an increase in GDP by 1.37%. This indicates that there is a very high positive correlation between the independent and dependent variables.

4. Discussion

In conclusion, taking into account that the number of Internet users and the volume of information have only a positive effect on the volume of GDP, we suggest to focus on the following priority directions in the future based on foreign experience:

- To accelerate the development of high-speed ("5G" and optical fiber) Internet networks throughout the country, including in remote areas, in order to increase digital inclusion, increase the number of Internet users, and improve economic conditions in remote areas;
- In order to prevent the digital divide and increase the country's competitiveness, include training in digital skills, programming, robotics and big data in educational programs at all levels, as well as develop programs for retraining the older population to work in the conditions of the digital economy;
- In order to attract new innovative solutions to the economy, create new jobs and increase the number of high-tech enterprises, support start-ups, invest in venture capital and create conditions that develop innovation centers, incubators and accelerators for IT companies. Encourage entrepreneurship in the fields of artificial intelligence, blockchain and cyber security;
- To reduce risks for business activities and the public sector, to increase trust in digital services, to strengthen information security, to create a national cyber security strategy taking into account international standards of practice, to develop protection systems against cyber attacks, and to ensure the security of citizens' and companies' data;
- Digital business, including incentives for digital enterprises, support for small and medium-sized enterprises, tax reduction for IT enterprises, and simplified regulation of digital entrepreneurship in order to attract investments to the digital economy, increase the number of IT companies.

5. Conclusion

Digitalization is a key driver of economic growth in developed and developing countries. The wrong transformation of the digitization process can have a negative impact on economic growth. As a result, the increase in digital inequality, increase in excess consumption, increase in the number of unemployed; information overload; negative consequences such as the spread of cybercrime, loss of data, negative impact on the emotional state and health of the population may occur.

The conclusion is that digitization factors are considered an additional "driver" in the long-term development of the economy, and implementation of the digital transformation process using the experience of foreign countries is important for the prospective development of the national economy.

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