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Research article

DIGITAL TRANSFORMATION OF MARKET INSTITUTIONS

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Abstract

This article shows how the increasing prevalence of digital technologies into various spheres of human life has necessitated change in a number of institutions. First, it grapples with economic institutions that ensure the functioning of a market economy. In addition, the definition of digital economy, the concept of digital economy, the technological developments specific to digital economy, the share of Information and Communication Technology (ICT) in the gross national product of a country, and the analysis of certain indicators of communication and information are also covered in the article.

Keywords: digital economy, digital market, GDP, virtual service, ICT, IT, segment, Uzbekistan, E-government

摘要: 本文展示了数字技术日益普及到人类生活的各个领域是如何使一些机构发生变化的。首先,它与确保市场经济运作的经济制度作斗争。此外,数字经济的定义,数字经济的概念,数字经济特有的技术发展,信息和通信技术(ICT)在一国国民生产总值中的份额,以及某些通信指标的分析 文章中也包含了相关信息。

关键词: 数字经济, 数字市场, GDP, 虚拟服务, ICT, IT, 细分市场, 乌兹别克斯坦, 电子政务

I. INTRODUCTION

In 1995, the American computer scientist Nicholas Negroponte (University of Massachusetts) created the term “digital economy.” Today, this term is used all over the world, by scientists, politicians, entrepreneurs,

journalists and so on. Last year, one of the main reports of the World Bank comprised the state of the digital economy in the world (the report was released under the title “Digital Dividends”). Not so long ago, a joint report of Huawei Technologies Co. and Oxford Economics was

published under the title “Digital Spillover” (Free Benefits of the Digital Economy) – it was entirely devoted to analyzing the possible approaches towards measuring the digital economy.

Until now, the real concepts of digital economics remain unclear. It is worth remembering the definition of the usual “analog” economy: the economic activity of the society, as well as the totality of the relations developing in a system of production, distribution, exchange and consumption. Containing the features of a computer and providing access to the Internet, mobile phones can already be considered as “consumption.” In this case, the digital economy can be represented as a part of economic relations which is mediated by the Internet, cellular communications, ICT, etc.

In their book, Brynjolfsson and Kahin (2002) mentioned to the term “digital economy” in alignment with the ideas of Neal Lane. According to him, digital economy, defined by the changing characteristics of information, computing, and communications, is now the preeminent driver of economic growth and social change. With a better understanding of these fundamental transformations, we can make wiser decisions – whether we are investing in research, products or services, or are adapting our laws and policies to the realities of a new age [1].

The rapid development of digital technologies leads to a radical transformation not only in the economy, but also in society itself [10-13]. Thus, by reducing information costs, digital technologies significantly reduce the cost of economic and social transactions for the state, companies, and individuals; promote innovation, in which transaction costs become almost zero; and also dramatically increase efficiency, with existing activities and services becoming cheaper, faster or more convenient. Finally, digital technologies promote integration – people get the opportunity to use services that were previously inaccessible to them [2].

Several scientists are conducting their own research in this direction. Based on seminal research conducted by The Alliance for Converging Technologies, which brings together over thirty world-class organizations, Blueprint to the Digital Economy provides important insights into the emerging digital environment and how it is changing today's workplace [3]. As U. Brenner, a professor at the University of St. Gallen in Switzerland said, “the aggressive use of data transforms business models, promotes the emergence of new products and services, creates new processes, generates greater utility and

introduces a new management culture.”[4]. TechCrunch, a news site about the digital economy, recently noted: “Uber, the world’s largest taxi company, owns no vehicles. Facebook, the world’s most popular media owner, creates no content. Alibaba, the most valuable retailer, has no inventory. And Airbnb, the world’s largest accommodation provider, owns no real estate. Something interesting is happening.” [4]. Many similar statements can be made, all of them only confirming what each of us observes in our lives and convincing us that we already live in a digital economy.

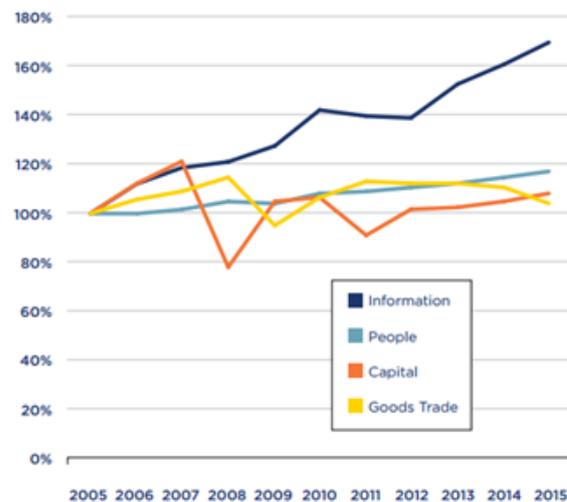


Figure.1
International information flows outpacing all others.
Source: *The Transatlantic Digital Economy: Center for Transatlantic Relations 2017*

In addition to the above statements, every day more than 7.7 billion search queries are carried out by Google, about 152 million calls are made on Skype, 58 million messages are posted on Twitter, 36 million purchases are performed on Amazon, and 2.3 billion gigabytes of information run on the Internet. Every minute of every day, 204 million emails are sent, 2.4 million posts are made to Facebook, 72 hours of video are uploaded to YouTube and 216 thousand photos are posted on Instagram. Every year, the amount of digital data increases by 50%. These figures are ultimately reflected in the change in the structure of trans boundary resource flow presented in Figure 1 [5].

Since 2005, the annual international flow of information has increased by almost 70% (see Figure 1). At the same time, migration flows increased by almost 20%, while capital and goods increased by about 5% to 7%.

The term “transformation” is used to describe the process of change through which a business

must pass in order to function in a digital economy. Transformation affects all aspects of a business, ranging from strategic objectives to infrastructure. Its principle can be formulated as “conducting evolution in a revolutionary way” [14]. The basis of transformation is the rule of continuous improvement. It is the awareness of the need to improve something that starts this process. This approach enhances the dominance of the information industry in the economy of several countries; the sphere of production and services is becoming more knowledge-intensive and innovative.

II. DYNAMICS OF DEVELOPMENT IN DIFFERENT PARTS OF THE WORLD

The Fletcher School at Tufts University, in partnership with MasterCard, developed the

Digital Evolution Index rating, which analyzes the state and pace of development of the digital economy in 60 countries. This development is the result of the interaction of four major factors: Supply Conditions, Demand Conditions, Institutional Environment, and Innovation and Change [6].

The diagram below is a map of the “digital planet,” measuring the current state and pace of the development of the digital economy. The countries shown are divided into four groups: Stand out (leaders), Stall out (countries with a slowing growth rate), Break out (prospective) and Watch out (problematic).

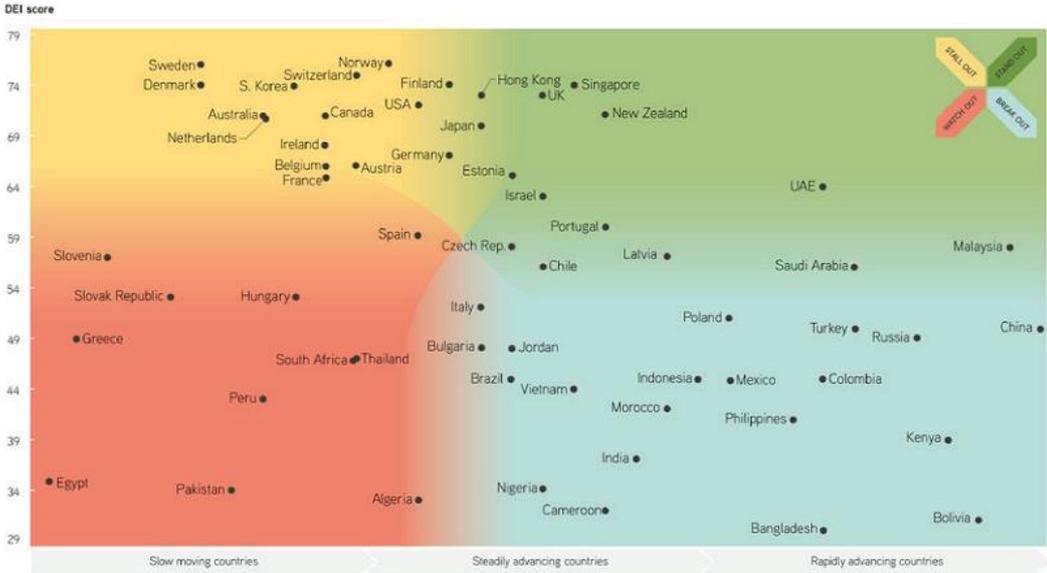


Figure 2. Digital Economy Development Chart, 2017
 Source: Digital Evolution Index 2017. The Fletcher School, Tufts University

Stand out (leaders) countries have a highly developed digital economy and strong development dynamics. They stimulate innovation, effectively using their advantageous position. Nevertheless, it is difficult to maintain high growth rates for a long time, and innovations are often an unreliable foundation for expanding economic influence. In order to maintain their positions, these countries should create new demand and develop innovative solutions at full speed. Otherwise, they risk becoming slower countries.

Stall out (slower growth rates) countries have a developed digital economy but are losing momentum. Five countries in our ranking with the highest ratings—Norway, Sweden, Switzerland, Denmark and Finland—are in this

category, which shows how difficult it is to maintain growth rates. To overcome the “digital plateau,” these countries have to make a conscious effort to rethink their economic model, put everything into the digital technologies and technological areas in which they lead, and remove any obstacles to innovation. In order to support innovative development, they can learn from leading countries. Using their experience, scale and network effect, countries with slower rates of development can change and begin to grow again.

Break out (prospective) countries are currently at a low level of digitalization but are developing rapidly. Significant development dynamics and great potential can make them very attractive to investors. They are constrained by

poor infrastructure and the poor quality of the institutional environment. The best solution for these countries is to create new, high-quality institutions to help stimulate innovation. Prospective countries have the potential to become leaders of the future. This group is led by China, Malaysia, Bolivia, Kenya and Russia.

Watch out (problematic) countries are at a low level of digitalization and have low dynamics, which creates great difficulties for them. In some, the pace of digital development is slowing down altogether. Some of the problem countries are creative in their approach to issues, such as the significant lack of infrastructure, institutional constraints and inexperienced consumers. The most reliable way to increase their development dynamics is to improve public access to the Internet by reducing the gap in the use of mobile Internet, that is, the difference between the number of mobile phones used and the number connected to the network.

The most interesting region in terms of the development of the digital economy is Asia. China and Malaysia are vivid examples. We can expect increased interest from investors and entrepreneurs in this region. However, it is important that the political institutions in these countries remain stable and provide support to the technology sector.

India has made significant efforts at the legislative level to increase its level of digitalization. These include the Digital India program and initiatives to expand the use of electronic payments. Nevertheless, India should remember its low rate of digital economy development, as it can slow down any such undertakings. To accelerate digital development in such an environment, India needs more extensive and systemic changes.

In this context, at the highest level in Uzbekistan, great attention is paid to the development of information and communication technologies and the enhancement of their role in the socio-economic development of the country. An example of this is the address given by the president of the Republic of Uzbekistan, Shavkat Mirziyoyev, to Oliy Majlis, which emphasized the following:

We must design National Concept of Digital Economy, which considers upgrade of all sectors of our economy with digital technologies. In this context, we need to introduce the program "Uzbekistan Digital – 2030." Digital economy will facilitate at least 30% increase of GDP and significant reduction of corruption. It's being also proved by the analysis of reputed international organizations. Accordingly, within two months'

time, the Government is to develop "roadmap" on transition to digital economy. In this regard, special attention needs to be paid at ensuring information security. [7]

According to statistic information from the state committee of the Republic of Uzbekistan, the share of ICT in GDP in 2014 was 2.31%; in 2016 it was 2.56%. ICT production amounted to 0.08% in 2014 and by 2016 this figure was 0.07%. ICT sales amounted to 0.13% in 2014 and by 2016 this figure was still 0.13%.

Over the past 10 years, the ICT market of Uzbekistan has changed to a large extent through the implementation of projects for the modernization and development of the telecommunication network throughout the country. The level of coverage in cities and regional centers of the republic with digital telecommunication networks has reached 100%. The level of coverage in rural settlements by telecommunications networks is 90%, including digital - 52% [8].

An important aspect of the formulation and implementation of digital economy is to address the following issues: increasing investment attractiveness in the regions and enhancing innovative activities in the development and social infrastructure, minimizing regional disparities in the socio-economic development of the regions, strengthening interregional relations and ensuring effective use of human resources. Uzbekistan has also already created integrated information systems for the provision of interactive services in the field of public procurement. For instance, there are online procurement services ("Xarid"), taxation ("MySoliq"), licensing and authorization procedures ("License"), customs clearance of goods ("Bojkhona"), systematization and storage of information on planning and the state budget execution process ("Budget"). The following systems have also been developed and implemented: the pension provision system ("Nafaqa"), the education system ("Ta'lim"), the system of public utilities ("Kommunal"), the system for collecting, processing, organizing and storing information about the activities of the courts, their decisions, the execution of court decisions, as well as information about the activities of the notaries ("Adlia = 2"), the system of providing aggregated statistical information of government agencies ("Davlatboshqaruvi").

According to UN's "E-government survey 2018" Uzbekistan ranks 81st in the E-Government Development Index (EGDI) with its indicators EGDI: 0.6207, Online Service Component: 0.7917, Telecomm. Infrastructure

Component: 0.3307, and Human Capital Component: 0.7396 [9].

Uzbekistan is about to develop its tendencies in this direction over the next few years. Since 2013, the Unified Portal of Interactive Public Services has been functioning in the country, which is designed to create conditions and

expand opportunities for applicants to receive them. The portal provides 308 electronic services provided by 2437 state bodies (all state bodies, including subordinate organizations).

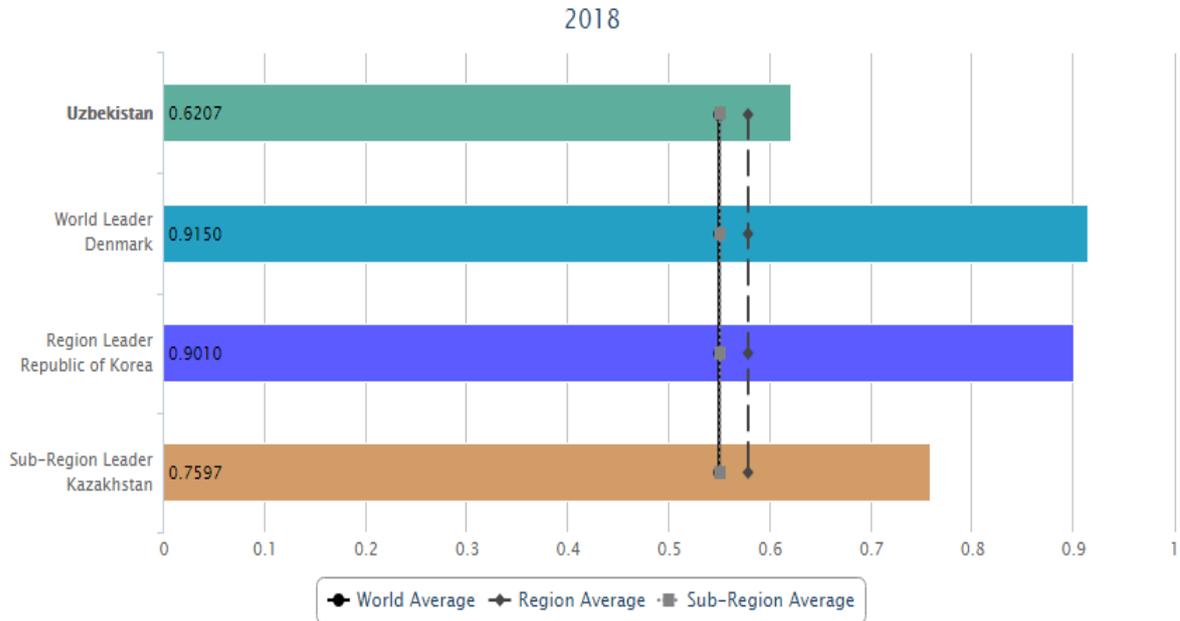


Figure 3. E-Government Development Index
 Source: United Nations e-government survey 2018" United Nations New York, 2018

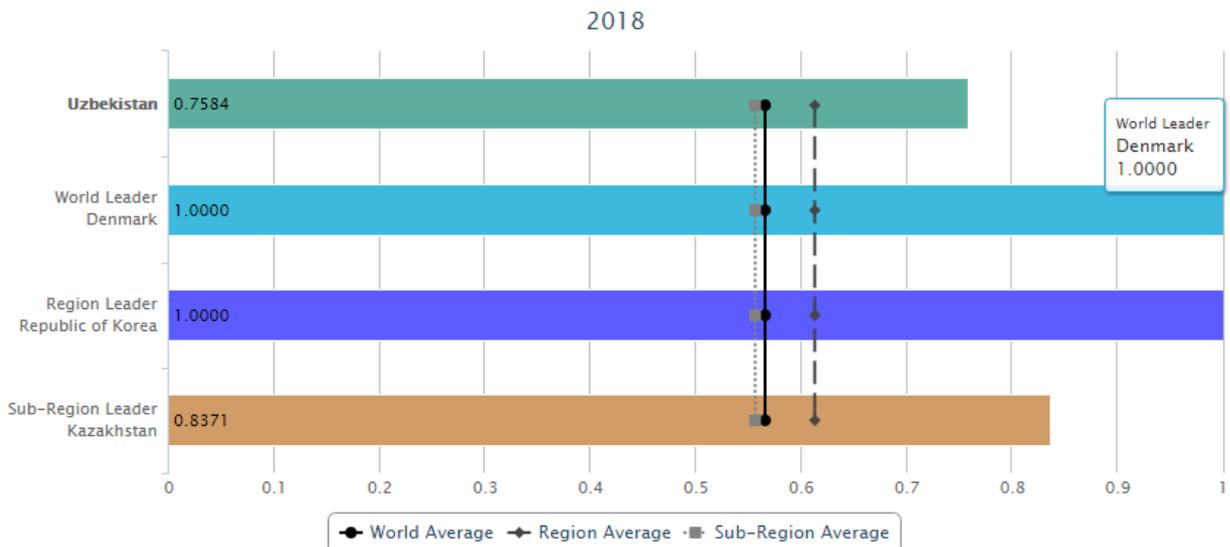


Figure 4. E-Participation Index
 Source: United Nations e-government survey 2018" United Nations New York, 2018

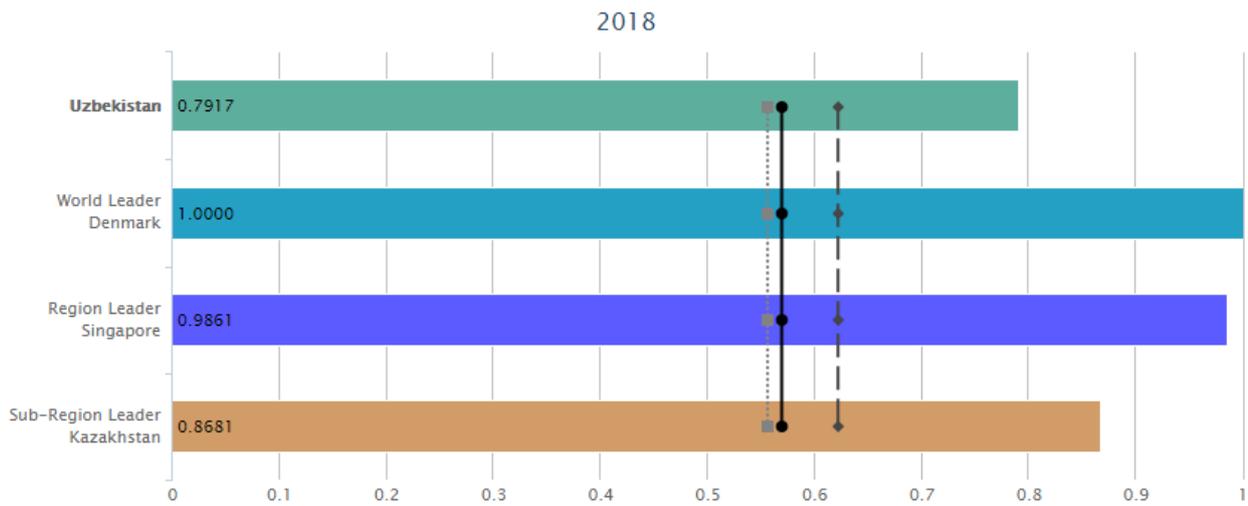


Figure 5. Online Service Index
 Source: United Nations e-government survey 2018" United Nations New York, 2018

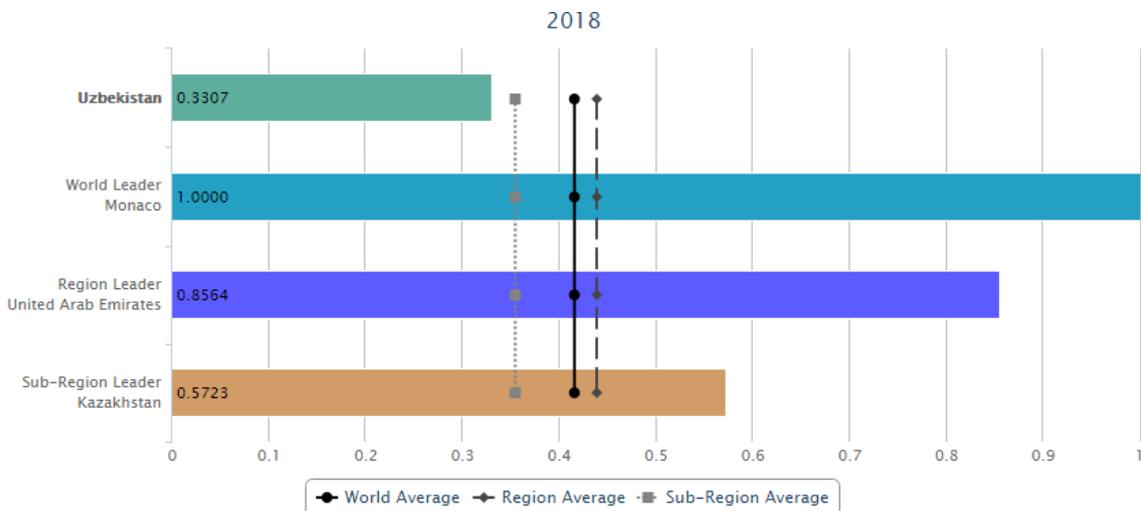


Figure 6. Telecommunication Infrastructure Index
 Source: United Nations e-government survey 2018" United Nations New York, 2018

The pace of building digital infrastructure is critical. In the world of the Internet of Things, everything must connect with each other quickly, safely and securely. In this regard, it is important to continue the implementation of measures to

expand the coverage of the population by advanced technologies and their rapid deployment throughout the country. Figure 7 demonstrates the scheme of interaction of participants in the Digital Economy state programs as an idea.

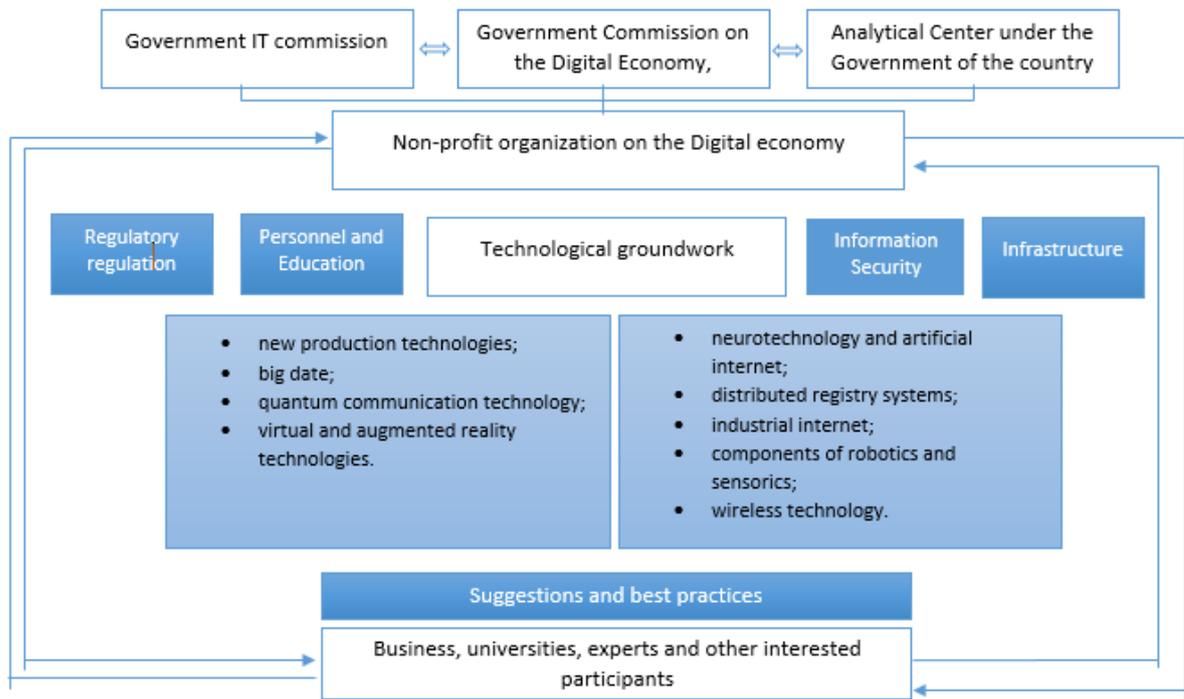


Figure 7. Interaction of participants for the state programs of the “Digital Economy” (illustration by authors)

III. Conclusions

Thus, the analysis performed allows the conclusion to be drawn that currently the state and municipal authorities are increasingly introducing information technologies to provide electronic services for the population and commercial organizations in the form in which they would like to receive them as quickly as possible and at the lowest cost.

As it is shown above, the suggested program of Digital economy for developing countries includes two main bodies. The main task of the **commission** should coordinate the interaction of all government bodies, business, and science, which will provide an opportunity to solve problems online. The **non-profit organization** must form requests from businesses, monitor the Digital Economy program, evaluate the effectiveness of program implementation, and become a deliberative governing body that determines strategic and technical issues.

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