

# Digital transformation of social sector as the factor of development and security of the country

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**Abstract.** The present research is aimed at investigating the current state of digital transformation of governance, economy and social sector. Basic attributes of digitalization of governance, economy and social sector are studied, particularly the mechanism of transformation of significant part of economic cooperation into information and telecommunication space; active introduction and application of e-money and smart contracts into civil transactions; development of e-governance. Problems of digital sector inevitably affect the compatibility of the economy under the current conditions, since lag in receiving and processing of relevant data and inability to use digital resource result in the loss of preceding market position. In terms of asymmetry of international trade, digital dependence of one particular country on another entails the increase in economic progress gap between these countries. If a country does not possess these developments or has lost any of technological solutions, then nothing new can be worked out, so the next step is impossible. This is the reason why the state of digital sector, particularly its hardware base, special technological equipment that provides the necessary parameters for an integrated circuit, is the key factor for the prospects of social development.

## 1 Introduction

The objective of the study is to substantiate theoretical and methodological provisions of current state of government, economy and social sector and to elaborate recommendations on improving digital transformation of government, economy and social sector. When the set objective was under realization, the following tasks reflecting the logic of the present research were fulfilled: regulatory legal basis of formation and development of digital transformation of governing, economy and social sector were studied; the content of digital

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transformation of governing, economy and social sector in modern Russia was investigated problems of digital transformation of governing, economy and social sector were identified; actual state and prospects were determined.

The research substantiated that at the current development stage of governing, economy and social sector, information and computer technologies determinatively influence not only technological, but also institutional environment of the society. The study of indicators in the field of the transformation of digital technologies into management, economy and social sector gives reason to confirm that the Russian Federation demonstrates good successes in digitalizing the studied sphere. Nevertheless, Russia, being integrated into the digital coordinate system, faces the key problem: the control area. Digital technologies will not work without adjusting the relationship between economic entities and their management in general. Without this synchronization, normal development is impossible.

## 2 Materials and Methods

The research was methodologically based on the fundamental provisions of modern economic theory and theory of state and municipal control over social sector and its functioning. Statutory and regulatory enactments of the Russian Federation, statistical data of public agencies and scientific centers regarding the issues of introduction of modern digital technologies and proceedings of national programs became the informational basis of the research. Statistical data show the increase in share of people working in service sector (in Western Europe, the USA, Japan, this share reaches 70% or more). Most of these people are engaged in processing data, which could be the basis for proving that digital economy exists [1]. The main problem of this approach is the difficulty of estimating the amount of data-related employees [2-4]. For instance, the process of increasing of number of computer technology experts, employees of telecommunications companies and analysts involved in data processing became the basis for digital economy formation. However, today there is no methodology for counting workers involved in digital economy [5-7]. At the same time, the amount of trade workers, lawyers and others, who have little connection with the digital economy, increases, but they all refer to the same category.

## 3 Results

Under current economy conditions, digital sector companies are coming to the fore and becoming growth points that provide the economy with a digital resource. While at the beginning of the XX century large oil, metallurgical, engineering and mining enterprises were the main forcers of the world economy, today the representatives of the digital economy sector became the largest companies (table 1) [8].

**Table 1.** Rating of the largest companies in the world in 2016

Company	Primary focus	Capitalization, billion doll.
Apple	Electronics and Information Technology	577.4
Google	Internet services, applets, YouTube video hosting	547.9
Microsoft	Software production	443.0
Amazon	Internet trading	360.0
Wells Fargo	Banks	299.0
Samsung	PC, mobile devices, household appliances and electronics	254.0

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China Mobile	Telecommunications	250.0
Verizon	Telecommunications	229.0.
AT&T	Telecommunications	226.0
Walmart	Retail	216.9

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The following list of measures that are taken by states and aimed at the development of the digital economy can be distinguished: developing the infrastructure, which is the basis for the formation of new business models and scientific and social networks; reducing barriers in the digital economy; increasing the level of digital technology possession, training and retraining of specialists; ensuring the confidence in the reliability and security of digital infrastructure, assessing risks; developing the digital economy.

The digital economy is based on innovative technologies created by the electronic industry. It is represented by two elements. Firstly, the electronic industry, the production of microchips, computers and telecommunication devices, household electronics. Secondly, companies providing services in the field of digital technologies and using digital means of production, storage and data management. The importance of developing the digital sector for national economies is confirmed by the fact that a number of countries are currently implementing comprehensive and ambitious programs aimed at developing the digital sectors of their economies, creating new work positions in these areas, and increasing the competitiveness of the electronic industry and IT technologies. Investment in the digital economy is becoming one of the key activities.

Among the prerequisites for the development of the digital economy in Russia, several aspects can be distinguished.

Firstly, the Russian education system has a high potential for training specialists in the digital economy. This is especially important because under conditions of digital economy, a person will focus mainly on the implementation of new opportunities and systemic organization of interaction in the ecosystem of people and machines, while routine operations will be performed by machines.

Secondly, there are original organizational and technological solutions for creating an effective infrastructure of the digital economy.

Thirdly, the integration and development of specific cases on the basis of modern principles of the digital economy will create a synergistic effect and lead to the overall growth of the Russian economy.

In accordance with the National Project known as “National Program “Digital Economy of the Russian Federation”, the Russian Federation intends to make a breakthrough complex digital transformation of governing, economy and social sector by 2024 [2]. For this purpose, the main tasks of the digital transformation of governing, economy and social sector have been worked out, regarding the need to improve legislation on digital technologies and digital objects, implement digital modernization of the information infrastructure, introduce digital practices in all key areas of governing, economy and social sector, and train personnel for the transformation period. According to the “National Program “Digital Economy of the Russian Federation”, six directions were defined to create the conditions for the digital transformation of governing, economy and social sector, remove existing obstacles and limitations for the creation and development of high-tech businesses:

1. Forming the personnel corps for the digital economy - "Personnel for the digital economy" [3].

2. Ensuring information security.

3. Introducing digital technologies.

4. Creating regulatory framework.

The two following directions are analyzed below in terms of modern realities and prospects for further development.

5. Transformation of digital technologies into state and municipal government.

The objective of the direction “Digital public administration” is to achieve the following indicators by 2024 [9]:

- 70% of operations between citizens or commercial organizations and state (municipal) bodies or budgetary institutions are carried out in digital form;
- 100% of priority public services are provided without the need for a personal visit to government bodies and other organizations, with the use of the registry model, online;
- 70% of the key data will have passed harmonization (compliance with master data);
- 90% of interdepartmental document flow of state or municipal bodies and budgetary institutions that is legally significant is performed in digital form.

Table 2 provides information on how people interact when receiving public services [10].

**Table 2.** Methods of interaction of the population with public authorities when obtaining public services, % of the total population aged 15-72

Region	2015	2016	2017
<b>Interacted, totally</b>	<b>46.4</b>	<b>56.1</b>	<b>65.7</b>
Via Internet	18.4	28.8	42.3
Personal visits	21.2	22.5	24.0
In municipal services offices	7.1	11.8	18.9
Did not interact	53.6	43.9	34.3

Statistics show a steady increase in the number of entities accessing public services.

Table 3 contains information on the number of people who received public services through the Internet [10].

**Table 3.** Population receiving state and municipal services via the Internet in 2017, by the constituent entities of the Russian Federation, % of the total population aged 15-72

Constituent entity of the Russian federation	2017
<b>Averagely in Russia</b>	<b>42.3</b>
Chukotka Autonomous District	8.8
Magadan Region	14.5
Oryol Region	14.7
Jewish Autonomous Region	15.2
Tyumen region	64.5
Republic of Bashkortostan	70.8
Republic of Tatarstan	73.4
Moscow Region	74.3
Yamal-Nenets Autonomous District	83.2

The table shows examples of the indicator from minimum to maximum, with the average value for Russia of 42.3%, clearly demonstrating that the state is actively involved in private relations, among other reasons due to the provision of electronic services, which allows concluding that the government plays a diverse part in social economic relations.

Table 4 provides information on the receiving of public services by the population in digital form, depending on the type of terrain [10].

**Table 4.** Receiving by the population of state and municipal services in digital form in urban and rural areas, % of the total population aged 15-72 years

Recipients of services in digital form	2015	2016	2017
<b>Totally</b>	<b>39.6</b>	<b>51.3</b>	<b>64.3</b>

Urban area	43.9	55.7	67.7
Rural area	21.9	36.4	52.5

Thus, there is a gradual equalization of the indicator for the population of urban and rural areas.

6. Creation and improvement of information infrastructure.

The objectives of the direction "Informational Infrastructure" is to achieve the following indicators by 2024:

- 97% of households with broadband Internet access to the total number of households;
- 100 Mbps stable coverage throughout the country 5G +;
- Sustainable coverage in all major cities (1 million people or more).

In modern realities, there is a tendency to equalize the digitalization level of all constituent entities of the Russian Federation due to the accelerated development of lagging constituent entities in comparison with leading ones. The average growth rate of leaders is limited to 11%, while lagging regions showed one of the highest growth rates in the first half of 2018 and added approximately 38% to the previous year indicators. The highest level of digitalization is observed in the central and western parts of Russia, while the lowest is in the southwestern part. There are 4 groups of federal districts: leader (Ural Federal District), gaining on three (Central Federal District, Volga Federal District, Northwestern Federal District), second three (Siberian Federal District, Far Eastern Federal District, Southern Federal District), and the closing one (North Caucasus Federal District). The Ural Federal District is a leader, since it has the smallest number of federal subjects, which are mostly homogeneous in the development of digitalization. Moreover, in the Ural Federal District accumulates relevant educational centers for training personnel, scientific and production bases, and technical support for socio-economic development. Ceding the leadership by the Central Federal District is reasoned by the fact that 18 constituent entities comprising this district are relatively heterogeneous in terms of the level of digitalization. In addition, there is an outflow of the best personnel and other resources to Moscow due to the concentration of financial resources in the capital. Table 5 presents data on the use of information and communication technologies in organizations.

**Table 5.** Use of information and communication technologies in organizations, % of the total number of organizations under study

Indicators	2015	2016	2017
<b>Organizations that applied:</b>			
PCs	92.3	92.4	92.1
servers	47.7	50.8	50.6
local computer networks	63.5	62.3	61.1
email	84.0	87.6	88.3
Internet	88.1	88.7	88.9
Organizations with a Web site on the Internet	42.6	45.9	47.4

В таблице 6 представлены данные об использовании сети Интернет в домашних хозяйствах [10]. Table 6 presents data on the use of the Internet in households [10].

**Table 6.** Internet access in households, % of the total number of households under study

Indicators	2016	2017	2018
<b>Households with Internet access</b>	<b>74.8</b>	<b>76.3</b>	<b>76.6</b>
including digital access	70.7	72.6	73.2
<b>Households using Internet access:</b>			
desktop (stationary) computer	42.4	40.6	39.9
mobile computers	39.1	40.6	39.3

tablet computers	24.5	26.8	25.6
other mobile devices	48.9	56.0	61.9

Among Russians using the Internet, the most popular online service is banking (61%), with the highest share among 18-24-year-olds (77%) and residents of Moscow and St. Petersburg (74%). The search and payment of state taxes and fines (45%) ranks second, this share is higher among 25-34-year-olds (57%) and citizens of Moscow and St. Petersburg (68%). The top 3 also includes the transmission of meter readings and payment of utility bills (40%), while among 45-59-year-olds this share is 45%, among residents of the cities of Moscow and St. Petersburg - 66% [11].

Third part of citizens (33%) more often buy plane or train tickets online (42% among 18-24-year-olds and 67% among residents of Moscow and St. Petersburg). 29% of respondents (35% among 18-24-year-olds, 34% among 25-34-year-olds) make appointments with a doctor via online services. 28% of people are more likely to arrange a visit offline (46% among residents of the Far Eastern Federal District). A quarter (27%) of the poll participants order a taxi using the Internet, 29% do it offline. Every fifth person (21%) buys tickets to the cinema, theater or concerts online, but 22% prefer to do it offline.

In the rating of services that Russians prefer to use offline, the purchase of clothing, electronics and household appliances ranks first: 35% of people often do this without using the Internet (against 12% of respondents who often do this online). The issuance of certificates and documents from government bodies ranks second: 27% of people more often do it offline (34% of 18-24-year-olds), against 19% of online users [12, 13]. The main indicators characterizing the availability of broadband Internet access and sustainable coverage are presented in table 7 [10, 14-16].

**Table 7.** Key indicators for the development of fixed and mobile Internet access

Indicators	2016	2017	2018
<b>The number of active subscribers with fixed access to the Internet: total, thousand</b>	<b>27493</b>	<b>31084</b>	<b>32250</b>
including broadband	27293	30877	32070
of which by connection speed:			
From 2 Mbps to less than 10 Mbps	6105	5981	5289
From 10 Mbps to less than 100 Mbps	16090	17802	17494
From 100 Mbps to less than 1 Gbps	2810	4981	7223
from 1 Gbps and higher	22.9	29.1	29.4
<b>The number of active subscribers with mobile Internet access: total, thousand</b>	<b>115813</b>	<b>122828</b>	<b>13159</b>
including broadband	104391	117406	126567
The number of active subscribers for broadband Internet access per 100 people:			
fixed	18.6	21.0	21.9
mobile	71.1	79.9	86.2

## 5 Conclusions

At the same time, it is necessary to conduct the widest possible assessment of the level of digitalization of information infrastructure and IT security in government, assessment of the level of competence of IT personnel, the possibilities for local processing of information data flows and centralized management of the infrastructure being created. Also, it is necessary to assess the state of the telecommunication network at the transport level (the availability of fiber-optic communication lines between settlements and the capabilities of

transport transmission equipment) with the participation of major telecommunication companies.

## References

1. Nauchnyye issledovaniya v sfere pedagogiki i psikhologii: (2018) pp 228-237
2. Pasport natsional'nogo proyekta «Natsional'naya programma «Tsifrovaya ekonomika Rossiyskoy Federatsii» (utv. prezidiumom Soveta pri Prezidente RF po strategicheskomu razvitiyu i natsional'nym proyektam (2019)
3. Pasport federal'nogo proyekta «Kadry dlya tsifrovoy ekonomiki» (utv. prezidiumom Pravitel'stvennoy komissii po tsifrovomu razvitiyu, ispol'zovaniyu informatsionnykh tekhnologiy dlya uluchsheniya kachestva zhizni i usloviy vedeniya predprinimatel'skoy deyatel'nosti (2019)
4. Voskresenskaya Elena, Vorona-Slivinskaya Lubov, Dmitry Mokhorov and Alexander Tebryaev V E3S Web of Conferences, 110, 02067 (2019) <https://doi.org/10.1051/e3sconf/201911002067>
5. Elena Voskresenskaya, Nikolay Zhilskiy and Emma Shariapova MATEC, 2018. Volume 170. Article Number 01057 DOI <https://doi.org/10.1051/matecconf/201817001057>
6. Voskresenskaya Elena, Vorona-Slivinskaya Lubov, Tatyana Ponomareva MATEC Web of Conferences, Vol. 193, 01028 (2018) <https://doi.org/10.1051/matecconf/201819301028>
7. Voskresenskaya Elena, Vorona-Slivinskaya Lubov, Achba Lybov V E3S Web of Conferences, Vol. 91 05010 (2019) <https://doi.org/10.1051/e3sconf/20199105010>
8. Rating of companies according to the analytical company Brand Finance: // URL: <http://brandfinance.com>
9. Vorona-Slivinskaya L.G., Voskresenskaya Ye.V. K voprosu o pravovom obespechenii transformatsii tsifrovoy ekonomiki // Leningradskiy yuridicheskiy zhurnal 1 (2019) pp 144-152
10. Informatsionnoye obshchestvo v Rossiyskoy Federatsii. 2018: statisticheskiy sbornik (2018)
11. Current statistical survey 2 (2019)
12. Ministry of Natural Resources and Ecology of the Russian Federation. State report on condition and use of mineral resources of the Russian Federation in 2016 and 2017
13. Ministry of Natural Resources and Ecology of the Russian Federation. State report on condition and use of mineral resources of the Russian Federation in 2017 and 2018
14. Rossiya v tsifrakh (2019) 549 p
15. Rossiyskiy statisticheskiy yezhegodnik (2018) 694 p
16. Churkin, V.I., Kalinina, O.V.: Estimation of excess burden of labor taxation in Russia, Actual Problems of Economics, 184(10), 278-282 (2016)