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**E-GOVERNMENT DEVELOPMENT INDEX:  
DYNAMICS OF THE WORLD AND RUSSIA'S POSITION**

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***Abstract***

The scope of the study of the dynamics of innovation development indicators in different countries and regions of the world is currently expanding due to new global processes and challenges. This paper discusses one of the global indices characterizing to what degree countries are ready to implement and use E-Government services – E-Government Development Index (EGDI). This index is calculated since 2001 and today is one of the largest by participants (193 countries in 2018). Based on the United Nations E-Government Survey 2018, global trends in E-Government Development and ranking formed on the EGDI 2018 are considered. Changes in the top leading countries are studied and a comparative analysis for 2016 and 2018 is carried out. In this paper, special attention is paid to the dynamics of Russia in the EGDI rating. The dynamics of Russia's position in 2010 – 2018 in the UN E-Government Survey, which showed a change in the growth in 2012 until a fall and stagnation in 2014 and 2016, and its causes are studied. The actions implemented by the Ministry of Telecom and Mass Communications of the Russian Federation in 2012 – 2018 and the tasks the Ministry of Digital Development, Communications and Mass Media faced set in May 2018 are considered.

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**Keywords:** E-government, E-Government Development Index, Human Capital Index, Online Service Index, Local Online Service Index, Telecommunication Infrastructure Index.



## 1. Introduction

In modern conditions, the competitiveness of national economies and the effectiveness of national security strategies are increasingly determined by the leadership in the field of R & D and the level of innovative development of the world. The indicators of these processes are global innovation indices and the rankings created on their basis. In terms of the parameters of innovation processes and actions taken, these indices and rankings can be divided into two groups:

1) general indices and rankings which consider a wide range of factors and results of innovative development (The Global Innovation Index, Bloomberg Innovation Index, Global Competitiveness Index);

2) specialized indices and rankings which are focused on individual processes and problems of innovative development (ICT Development Index, E-Government Development Index (EGDI), Global Cybersecurity Index etc.).

The paper deals with one of the specialized indices – *E-Government Development Index (EGDI)*, which characterizes the degree of readiness and the capacity of different countries to use information and communication technologies (ICTs) in state and municipal management.

## 2. Problem Statement

The problems of information society development and innovative development are always in the focus of attention of individual states, their legislative and executive bodies, as well as various non-governmental international organizations, associations and public organizations. Over the last decade, some global programs in this area were adopted, in particular, in Russia: "The Strategy for Information Society Development" (2008), "The Strategy for Innovative Development of the Russian Federation until 2020" (2011), the program "National Technology Initiative" (2015), the "Strategy of Scientific and Technological Development of the Russian Federation" (2016), the program "Digital Economy of the Russian Federation" (2017).

### 2.1. Research on global innovation indices

Innovative activity indicators are global indices and rankings generated by numerous international organizations and agencies (UN, World Economic Forum, International Telecommunication Union, Bloomberg Agency, etc.). This stimulates research on concepts, calculation methodologies, dynamics of these indices and rankings, including the E-Government Development Index, the analysis of which is presented in the works by foreign and Russian scientists (Aquaro, 2018; Bershanskaya & Chugunov, 2013; Davies, 2015; Gabazova & Goleva, 2017; Gashkova, Berezovskaya, & Shipunova, 2017; Korableva, Kalimullina, & Magomedova, 2017; Rudenko & Didenko, 2016, Vylegzhanina, 2016; Evseeva, Bashkarev, Pozdeeva, & Tarakanova, 2017).

### 2.2. Concepts of E-Government

Over the past two decades, researchers from different countries have been trying to clarify the terminology used in studying the problems of ICTs applied by state and municipal authorities. This relates primarily to the term E-Government.

Ron Davies in the document addressed to the members and staff of the European Parliament says that “E-Government refers to efforts by public authorities to use information and communication technologies (ICTs) to improve public services and increase democratic participation. E-Government aims to improve government efficiency through the reduced cost of electronic information management and communications, the reorganisation of government agencies and the reduction of administrative silos of information” (Davies, 2015, p. 1).

Evolving definitions of E-Government and related developments are presented in the UN E-Government Survey 2018. It can be seen that definitions are gradually becoming more detailed and multidimensional. At the same time, the term “Digital Government” is increasingly used. In different countries, it is used in government programs and reports, on the OECD website (in August 2018, the Digital Government Portal presented reports on Sweden, Norway, Portugal, Mexico, etc.), by experts from the World Bank and the Institute for the Development of Information Society in the report “Digital government 2020. Prospects for Russia” (2016), etc.

In the context of comparison of these definitions it is interesting to consider the point of view of experts of the International Telecommunication Union (ITU). Back in 2008, they rightly, in our opinion, highlighted the disparity of these terms and defined as follows:

- Digital government as the “umbrella term that comprises all uses of information and telecommunication technologies in the public sector”;
- e-Government as one aspect of digital government. e-Government refers to the provision of governmental services by ICTs, particularly over the Internet (Electronic Government for Developing Countries, 2008, p. 59).

### **2.3. Incentives to improve e-Governance**

Currently, many states monitor the EGDI and the ranking formed on its basis, as it allows them to obtain information on global development trends of E-Government, to compare their own positions in this area with those of other countries, to identify problematic indicators or groups of indicators, to study and use the experience of other countries, the material on which is widely presented in UN E-Government Surveys.

## **3. Research Questions**

This paper examines the dynamics of E-Government Development in 2016 – 2018, which makes it possible to achieve a qualitatively new, higher level of efficiency and convenience of information on the results of the state bodies for organizations and citizens of the state and municipal services.

### **3.1. Analysis of the E-Government Development Index 2018 and the ranking formed on its basis**

The paper considers the EGDI 2018 and changes in comparison to 2016, its sub-index structure, and changes in the group of leading countries.

### 3.2. Dynamics of the position of Russia in the EGDI in 2010 – 2018

The dynamics of the position of Russia in 2010 – 2018, which showed a change from the rise in the ranking 2012 to deterioration and stagnation in 2014 – 2018, is considered. The change of sub-indices in this period is analyzed too.

### 3.3. Actions of the Ministry of Telecom and Mass Communications of the Russian Federation in 2012 – 2018

The task of this paper was to identify the causes of the stagnant dynamics of the EGDI and consider the measures implemented by this Ministry to improve it in 2012 – 2018. Another goal was to identify the challenges faced by the Ministry of Digital Development, Communications and Mass Media, which was established in May 2018.

## 4. Purpose of the Study

The aim of the study was to analyze the global dynamics and dynamics of Russia in the E-Government Development ranking.

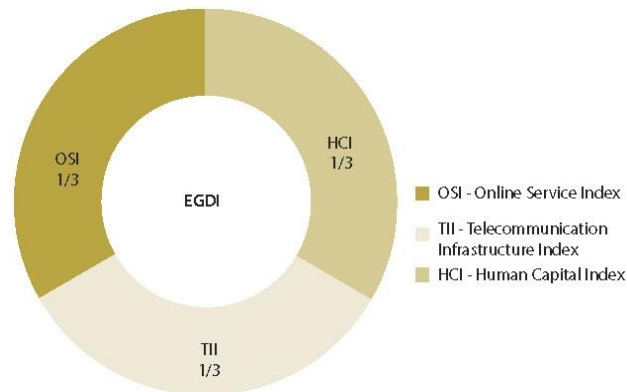
## 5. Research Methods

The paper used the method of comparative analysis of the data presented in the UN E-Government Surveys.

*The EGDI* is a composite indicator and describes the level of readiness and capacity of national institutions to use ICT to provide public services. It is calculated as the arithmetic mean of three composite subindices:

- **Telecommunications Infrastructure Index, TII** (the calculation is based on 5 indicators: the estimated Internet users per 100 inhabitants; the number of main landlines per 100 inhabitants; the number of mobile subscribers per 100 inhabitants; the number of wireless broadband subscriptions per 100 inhabitants; the number of cable broadband subscriptions per 100 inhabitants);
- **Human Capital Index, HCI** (it consists of 4 elements: the adult literacy rate; the combined primary, secondary and tertiary gross enrolment ratio; the expected years of schooling; the average years of schooling);
- **Online Service Index, OSI** (it's calculated following the survey of the official websites. It is a composite normalized score derived on the basis of an Online Service Questionnaire, which consists of a 140 question list in 2018).

The structure of the *EGDI* is shown in Figure 01.



**Figure 01.** The three components of the EGDI (the United Nations E-Government Survey, 2018, p. 200)

## 6. Findings

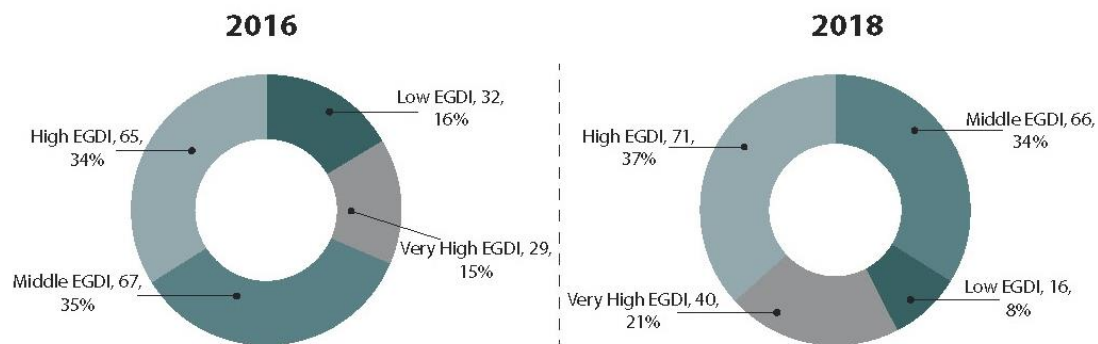
### 6.1. Global trends in E-Government Development

The United Nations E-Government Survey has been published under the auspices of The Department of Economic and Social Affairs of the United Nations (UN DESA) since 2001 with periodicity of every two years. 193 countries have participated in this survey since 2014. On July, 19, 2018 the UN E-Government Survey 2018 was published, which allows us to judge about some new trends in the development of e-Government in different countries.

One of the main positive global trends is the increase in the average world EGDI from 0.47 in 2014 to 0.55 in 2018 due to the continuous improvement of its sub-indices. Another positive global trend is a significant improvement of the OSI Online Service Index average – from 0.39 to 0.57 or by an average of 40 per cent (the United Nations E-Government Survey, 2018, p. 87).

In 2018, 11 new countries joined the “Very High EGDI Level” group of countries (EGDI: 0.75 – 1.00), which only had 10 countries in 2003 and 29 countries in 2016. Eight of them are from Europe (Belarus, Greece, Liechtenstein, Malta, Monaco, Poland, Portugal and the Russian Federation), two are from Asia (Cyprus and Kazakhstan) and only one is from Latin America (Uruguay).

Figure 02 shows the percentages of different groupings based on the EGDI in 2018 compared to 2016.



**Figure 02.** The number of countries grouped by E-Government Development Index (EGDI) in 2016 and 2018 (the United Nations E-Government Survey, 2018, p. 84)

In 2018, there are more countries with the High-and Very-High-EGDI or values between 0.50 and 1.00 – 58 % (2016 – 49 %). The number of countries in the Middle-EGDI level group (EGDI:0.25 – 0.50)

remained almost unchanged: 67 in 2016 and 66 in 2018. But experts noted a positive trend: 18 or one-third of those countries have transitioned from a lower level. Only two countries (the Democratic People’s Republic of Korea and Sudan) have moved from the Middle- to Low-EGDI level. Twelve of the 18 countries are from Africa, two are from Asia, and the other three countries are a part of SIDS. The number of countries in the Low-EGDI level (EGDI:0.25 or below) have dropped by 50 per cent: 32 countries in 2016 and only 16 countries in 2018 (14 in the Low-EGDI group are African). However, the UN noted that, despite some progress, the digital divide still persists.

## 6.2. Changes in the top leading countries of E-Government Development

Table 01 compiled by us shows the positions of the leading countries and Russia in 2018 and the changes in 2016 – 2018.

**Table 01.** E-Government Development Index: Top 15 Countries and the Russian Federation\*

2018 Rank	Changes 2016	Country	EGDI 2018	OSI	TII	HCI
1	+ 8	Denmark	0.915	1	0.7978	0.9472
2	–	Australia	0.9053	0.9722	0.7436	1
3	–	Republic of Korea	0.9010	0.9792	0.8496	0.8743
4	- 3	United Kingdom	0.8999	0.9792	0.8004	0.92
5	+ 1	Sweden	0.8882	0.9444	0.7835	0.9366
6	- 1	Finland	0.8815	0.9653	0.7284	0.9509
7	- 3	Singapore	0.8812	0.9861	0.8019	0.8557
8	–	New Zealand	0.8806	0.9514	0.7455	0.945
9	+ 1	France	0.879	0.9792	0.7979	0.8598
10	+ 1	Japan	0.8783	0.9514	0.8406	0.8428
11	+ 1	USA	0.8769	0.9861	0.7564	0.8883
12	+ 3	Germany	0,8765	0.9306	0.7952	0.9036
13	- 6	Netherlands	0.8757	0.9306	0.7758	0.9206
14	+ 4	Norway	0.8557	0.9514	0.7131	0.9025
15	+ 13	Switzerland	0.852	0.8472	0.8428	0.866
...	...	...	...	...	...	...
32	+ 3	Russian Federation	0.7969	0.9167	0.6219	0.8522

\* Note: Compiled and calculated by: the United Nations E-Government Survey (2016, pp. 154 – 158); the United Nations E-Government Survey (2018, p. 89).

In 2018, the 1st place in the ranking is taken by Denmark (EGDI = 0.915), which rose by 8 positions in two years. It is followed by Australia and South Korea (2nd and 3rd place respectively), which did not change their positions. The UK, which was the leader in 2016, lost 3 positions and is only in the 4th place. The same loss is experienced by Singapore, which moved down from the 4th to the 7th position. Even stronger deterioration was demonstrated by the Netherlands (-6), which went down from the 7th to the 13th position. At the same time, Switzerland (+13) made a significant breakthrough, rising to the 15th position in the ranking.

Russia (EGDI = 0.7969) rose from the 35th position in 2016 to the 32nd in 2018, falling into the “Very High EGDI Level” group of 40 countries (EGDI: 0.75 – 1.00).

The United Nations E-Government Survey 2018 also calculated the *E-Participation Index (EPI)*. It characterizes E-participation, defined “as the process of engaging citizens through ICTs in policy, decision-making, and service design and delivery so as to make it participatory, inclusive, and deliberative”. The EPI is based on: 1) *e-information* – availability of online information; 2) *e-consultation* – online public consultations, 3) *e-decision-making* – direct involvement of citizens in decision processes (the United Nations E-Government Survey 2018, p. 112).

In 2018 Denmark, Finland, the Republic of Korea are ranked as global leaders according to E-participation. Netherlands, Australia, Japan, New Zealand, United Kingdom, United States and Spain were also among the leaders. Russia scored 92.39 % of the maximum possible number of points (in 2016 – 75 %) and rose in the EPI index from the 34th position to 23rd place in the group of countries with the highest level of citizen engagement (the United Nations E-Government Survey 2016, p. 174; the United Nations E-Government Survey 2018, p. 248).

For the first time in the United Nations E-Government Survey 2018 the *Local Online Service Index (LOSI)* was calculated in 40 municipalities worldwide. The first position was taken by Moscow, followed by Cape Town and Tallinn, respectively. Table 02 presents the Top 10 cities of the final ranking.

**Table 02.** Ranking of cities 2018: Top 10\*

Rank	City	Total indicators	Technology indicators	Content provision indicators	Service provision indicators	Participation and engagement indicators
1	Moscow	55	10	26	11	9
2	Cape Town	53	10	26	11	7
2	Tallinn	53	11	26	12	5
4	London	51	10	25	11	6
4	Paris	51	11	24	8	9
6	Sydney	50	11	21	12	7
7	Amsterdam	49	9	25	10	6
7	Seoul	49	11	25	6	8
9	Rome	48	11	25	8	5
9	Warsaw	48	11	25	7	6

\* Note: Compiled by: the United Nations E-Government Survey 2018, p. 159.

### 6.3. The dynamics of Russia's position in the EGDI in 2010 – 2018.

The dynamics of Russia in the E-Government Development ranking, presented in Table 03, is ambiguous: after the soar from the 59th place in 2010 to 27th position in 2012, the country remained in the same place in 2014 and was in the fourth ten in 2016 and 2018.

**Table 03.** The dynamics of Russia's position in the E-Government Development ranking in 2010–2018\*

Indicators	Years				
	2010	2012	2014	2016	2018
Russia's general position in the ranking	59	27	27	35	32
EGDI	0.5136	0.7345	0.7296	0.7215	0.7969
Russia's position in the ranking by each sub-index					
OSI	0.1123	0.6601	0.7087	0.7319	0.9167
TII	0.0913	0.6583	0.6413	0.6091	0.6219
HCI	0.3101	0.8850	0.8388	0.8234	0.8522

\* Note: Compiled by: the United Nations E-Government Survey (2010, p. 114); the United Nations E-Government Survey (2012, p. 126); the United Nations E-Government Survey (2014, p. 202); the United Nations E-Government Survey (2016, p. 151); the United Nations E-Government Survey (2018, p. 225).

In 2012, almost immediately after a new team was put together in the Ministry of Telecom and Mass Communications, headed by Nikolai Nikiforov, the Ministry presented the public its plans for the next six years and set the targets in some areas to be achieved by 2018. In particular, in the E-Government Development ranking Russia was to enter the top twenty in 2018, which was estimated by experts on the basis of the dynamics in 2010 – 2012 as a realistic indicator. The Ministry actively developed state services, including the public services portal. Thus, in 2012 – 2018 the number of users of the public services portal increased significantly: from 3.6 million to 70 million people (RIA Novosti, 2018).

In October 2016 the Ministry presented the completed System Project of Russia's E-government until 2020 (System Project of E-government of Russia, 2016). The document envisaged two basic directions for transformation in the field of E-Government: 1) transition from the focus on infrastructure to the focus on the user; 2) introduction of modern management approaches to e-government development.

However, in 2018, Russia took only the 32nd place in the E-Government Development ranking, which, combined with the dynamics in other world IT-rankings, can be regarded as stagnation as a minimum. After the extremely low values of indicators of all sub-indices were overcome in 2010, in the period 2012-2018 a stable positive dynamics was only shown by the OSI, which increased from 0.6601 to 0.9167 (Table 03). During this period the TII and the HCI demonstrated an insignificant decrease (with some increase in 2016 – 2018: the TII increased from 0.6091 to 0.6219, and the HCI from 0.8234 to 0.8522).

According to such experts as Yuri Hohlov (the Institute of the Information Society) and Sergey Shaposhnik (the Competence Centre for Digital Economy, Plekhanov Russian University of Economics), the progress of the OSI at the first stage was associated with the transfer of services to electronic form, creation of a single portal of state and municipal services, and the disclosure of information about the activities of the governmental bodies on official websites. At the second stage, this dynamics was supported by the expansion in the number of public services in electronic form and the implementation of some initiatives in the field of interaction with citizens using ICTs, such as the "Russian Public Initiative", the publication of open data, the creation of a Single Portal for posting information on the development of draft bills by the authorities and their public discussion (the UN E-Government ranking, 2018).



Yuri Hohlov and Sergey Shaposhnik refer the positive dynamics of Russia's indicators in 2016 – 2018 to the purposeful efforts of the Ministry of Telecom and Mass Communications. After a fall in the EGDI 2016 ranking, at the beginning of 2017 it prepared guidelines and the Single Functional and Technical Requirements for the portals of the Russian Federation Government and the websites of the ministries.

However, the experts of The National Research University-Higher School of Economics (HSE), when assessing the prospects of our country, say that in the nearest future, Russia is unlikely to expect a significant breakthrough in the EGDI ranking (Russia in the UN E-Government Development ranking, 2016). According to them there are some reasons for that: the approach in our country to the maximum possible values of the number of Internet users, the level of adult literacy, the coverage of population with primary, secondary and tertiary education, the achievement of a certain limit value of mobile communication spread with a reduction in the number of landlines, etc. In our opinion, this list should be supplemented with the negative effect of the sanctions imposed against Russia and the low costs of the federal budget. The HSE researchers attribute the improvement of Russia's positions to the dynamic spread of cable broadband Internet access, creation of conditions for effective communications between citizens and the state, as well as ensuring the necessary level of popularization of electronic services.

In our opinion, the transformation of the Ministry of Telecom and Mass Communications in May 2018 into the Ministry of Digital Development, Communications and Mass Media headed by Konstantin Noskov is aimed at positive dynamics in the EGDI ranking. Among its objectives are forming a single interface and standard of electronic services to help Russians to receive public and municipal services remotely and developing domestic IT-infrastructure. In fact, priorities have change: if before the Ministry was focused on developing a state policy in the field of information technology, now it should go further and digitize the majority of public services and create common standards in this area. “Today, various structures and departments, especially at the regional level, have their own electronic systems of communication with citizens. But all these systems do not have a single interface and a common standard of operation. In my opinion, the first objective of the Ministry of Digital Development is to bring them to a single methodological basis,” said the Deputy Chairman of the State Duma Committee on Economic Policy, Industry, Innovative Development and Entrepreneurship Dmitry Sazonov (Mikhailovskaya, 2018).

## 7. Conclusion

Thus, our study allows us to draw the following conclusions:

- The UN E-Government Survey 2018 identified a number of global and regional positive trends in E-Government Development (increase in the average world EGDI, extension of the group of countries with High-and Very-High-EGDI, transition of a number of African countries to the group with the Middle-EGDI, etc.). However, despite these successes, digital divide and gap in E-Government Development remain in the world;
- there have been some changes among the top leading countries (Denmark has taken the first place, the UK and Singapore have worsened their positions, etc.), but this group remains quite stable;

- over the past 8 years Russia has had mixed dynamics in the E-Government Development ranking. In 2018, it slightly improved its position in this ranking, rising from the 35th place to the 32nd place. However, the remaining serious lag behind the leaders requires further work to address the shortcomings that hinder the development of E-Government and E-Municipal Governance in our country.

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