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# A Framework for Evaluating Online Services and E-Participation Tools: UN Methodology Application to Russian Regions

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Abstract. The article discusses the experience of UN international methodology for assessing e-government development at federal and regional levels in Russia. United Nations procedure for e-government development measuring is widely used in the world and allows comparison of 191 countries. Focusing on international standards, the authors conducted survey of federal and regional executive authorities' web-sites. The article describes methodological approaches to web monitoring in accordance with UN methodology, web-monitoring results and recommendations to international methods' application in assessment of regional specificity of e-government and e-participation in Russia. The paper touches the limitations of international rankings and provides supply-side assessment of e-government implementation.

Keywords. e-government, E-Government Development Index, EGDI, eparticipation, evaluation, international index, web-monitoring

#### 1. Introduction

On the world stage it has been a tendency to expand the openness of government, online public services development, as well as e-participation tools for citizens and business engagement in decision making. In this regard, it is urgent to develop valid methods to measure the progress in this area. Various international organizations (UN, ITU, WB, OECD etc.) create indices for cross-country comparisons. UN E-Government Development Index (EGDI) serves as a guide to enhance competitiveness and performance implementation of government programs in a competitive countries, including Russia [1].

Russia's position in the international index is a key indicator of the governmental program "Information Society" (2011-2020). At the same time there is a legitimate question of whether international methodology in its original form can be applicable to estimate e-government and e-participation parameters within a particular country and its regions.

Under the order of the Ministry of Telecom and Mass Communications of the Russian Federation, the research team had conducted monitoring of federal and regional executive authorities web-sites. In order to follow the key performance indicators of Russian ICT Ministry this research was aimed to assess the level of online services at regional level by using UN EGDI methodology.

#### 2. Literature review

E-government measurement techniques are not a new topic in scientific literature. There is urgent discussion among scholars about what techniques could measure the success in this field appropriate. In world practice, United Nations E-Government Development Index is the most popular ranking used for cross-countries comparison.

Benchmarking and ranking tools, such as proposed index, are used by decision makers when devising information and communication policies and allocating resources to implement those policies [2 Heeks]. At the same time the researchers recognize its limitations in several fields. For that reason, more e-Government benchmarking studies focus on supply-side not back-office [3]. Rorissa claimed that "e-Government benchmarking methods become more problematic, and the critics' views more telling, when they move beyond objective, supply-side criteria (e.g., services offered via websites) to include calculated indices, psychometric measures, or other subjective indicators (e.g., human development index and internet use)" [4]. In the case of the EU, its e-Government benchmarks are simple, inexpensive, fairly transparent and replicable, and widely accepted and used [5].

For the purpose of finding best solutions for measurement, Rorissa [4] collected data from 582 e-Government websites sponsored by 53 African countries. The applied frameworks respond, in part, to the need for continuous assessment and reconsideration of generally recognized and regularly used frameworks. The authors recognized that almost all African governments now have some presence on the Web, including fully fledged e-Government web portals. However, the current status of e-Government services in African countries is not well documented in detail. They have computed e-Government indexes, produced e-Government rankings, and compared rankings to previous ones. A clear picture that emerges from the analysis and results is that although progress has been made, there is a long way to go, to bridge not only the North - South divide when it comes to e-Government services but also among the various sub-regions [6].

E. Pnopoulou et al. [7] developed a framework for evaluating websites of public authorities based on 4 axes: website general characteristics, content, e-services and e-participation. They found the high level of content and general characteristics development (such as navigation, accessability, privacy). E-services and e-participation aspects are the least developed.

Huang et al. in their paper showed a close correlation between usability and credibility, as e-government websites with a high usability were perceived as having higher credibility, and vice versa [8].

Holzer and his team conducted U.S. survey of municipal websites (2 largest cities from each state) using the following parameters for assessment: privace/security, usability, content, services, citizens and social engagement [9]

Zhao et al. studies threats and opportunities of e-government web-security and used a combination of three methods - web content analysis, information security auditing, and computer network security mapping - for data collection and analysis.

The findings indicate that most state e-government sites posted privacy and security policy statements; however, only less than half stated clearly what security measures were in action [10].

Wu and Guo conducted specialized analysis of e-government performances of 31 provincial government websites in China using DEA [11] providing assessment of e-government efficiency differences both in different individual provinces and in different districts. The lead to the conclusion that the less developed western provinces achieve a higher efficiency mean than the eastern and middle ones in China. R. Medaglia [12] analyses publications on e-participation, identifying them as belonging to a single scheme consisting of the following categories: e-participation actors, e-participation effects, contextual factors, e-participation evaluation. Fedotova et.al assesses the level of electronic participation (e-participation) initiatives that are promoted by government authorities in Portugal at local and national levels [13]. A. Prosser [14] investigates e-participation on the European Union level with the focus on legal basis and technical possibilities for citizens participation. L. Bershadskaya and colleagues conducted comparative analysis of the USA, the UK and Russian e-petition portals and distinguished strong and weak traits of each portal [15].

The scholars identified several technical issues with indexes and pointed to the need for a statistical tool that could be used to evaluate and guide the development of e-government ranking systems. Whitmore A. suggests to apply factor analysis to the ranking of e-government programs. The importance and high visibility of e-government rankings highlights the need for the use of a more sophisticated set of tools in order to ensure that "the rankings fully measure what they purport to and are not an artifact of their own design methodology" [16].

A review of the scientific research allows one to summarize that the development of e-participation mechanisms constitutes a global trend. At the same time there is a lack of studies focused on deep methodological analysis, as well as finding the borders of international techniques application.

# 3. Research Methodology

Monitoring of Russian executive authorities' websites was based on UNDESA methodology (UN agency which forms EGDI) [1], which has been selected by Russian authorities as key points. The web-monitoring allows to evaluates 4 stages of Online services index development:

- emerging online presence,
- enhanced presence,
- transactional presence,
- connected presence.

According to UN methodology, we assessed national portal, e-services portal as well as the websites of the related ministries of education, labor, social services, health, finance and environment protection.

Criterion "presence / absence" (1 point- yes, 0 - no) was taken as evaluation metric for complex assessment by researchers. The following approach was applied during the research: the presence of some indicators has opened opportunities to get points for its high-quality presentation (acess from home page, descriptions, analytical tools etc.).

This evaluation brought more detailed assessment of web-sites opportunities and functions.

In accordance with survey methodology each web-site could get maximum 38 points for 4 stage indicators. The 4<sup>th</sup> stage was assessed on web-sites only, becuase online services portals couldn't consists of such element in Russia.

As a result, web monitoring methodology has been corrected due to clarifiaction the list of criteria in two groups of objects: governmental web-sites and online services portals (Table 1).

Table 1. Web-monitoring structure: distribution of max possible points for stages and web-resources

Indicators (yes-1, no-0)	Total points	
	online services portals	web-sites
Stage 1. Emerging Online presence	8	12
Stage 2. Enhanced presence	11	11
Stage 3. Transactional presence	26	6
Stage 4. Connected presence	0	38
TOTAL	45	67

Online services index at regional level was calculated according to the formula used in UN survey. The final score was determined by summing the scores for all four stages of online services development.

The fourth stage of online services assessment relates to e-participation tools and methods, such as:

- calendar listing of upcoming e-participation activities;
- e-participation tools for public opinion assessment;
- feedback;
- archive on responces by government to citizens's questions, queries and inputs;
- e-voting on public policy issues;
- regulations and law online discussions with citizens;
- links to social networks;
- Open Data page or link to portal;
- Open Budget publication.

The authors considered e-particiaption development through these indicators achievement, corresponding to UN e-information, e-consultation and e-decision-making parts.

The authors have apllied specified approach for government portals and online services portals, taking into account rationality and necessity of certain indicators presence on each of them. Specially trained group analyzed the web-sites. If in the process of assessing the implications questions and ambiguities emerged, the group came together for discussion and final decision.

# 4. Findings

665 websites of federal and regional authorities and public services portals were assessed during the research. Web monitoring was carried out in two stages: in January and August 2014. After the first stage the methodology for assessment was corrected: evaluation criteria were separated between administration sites and online services portals. These changes were adopted in accordance with new trends of UN methodology. The results of the first stage of monitoring showed that the Ministry's website, under Russian law and practice, should not be present indicators presented in the portal services. For example, the website of the authority couldn't have user's personal account, and e-participation tools couldn't be presented at online services portal. etc. In this paper all graphs and tables with results belong to the 2d final stage of monitoring based on changed methodology.

# 4.1. Stages of Online Services Development

The monitoring results for federal and regional levels were calculated into online services indexes using the same approach of calculation as proposed in EGDI (fig.1). According to research results, federal level websites have demonstrated higher level of online services presentation.





Online services index value of at regional level varies from 0.00 to 0.93. The first group (with the highest index value from 0.80 to 0.93) includes 9 regions; the second (0.60 to 0.79) - 32, the third (0.40 to 0.59) - 35, the fourth (lowest index value - less than 0.39) attributed 9 subjects of the Russian Federation.

# 4.2. eParticipation tools assessment

The study showed that the fourth stage hasn't been as much developed as other stages of online services in Russia (Table. 2). Information services and applications from citizens are the most popular functions at all sites. Special attention in Russia at federal and regional levels is paid to open data (45%) and open budget (33%) publication. However, more sophisticated analytical tools that allow citizens to participate in political decision-making electronically are almost absent at all the analyzed web-sites.

web-

Indicators	The percentage of we sites with indicators
Public e-box	more than 50%
E-participation tools to obtain public opinion	
Open Data page	
Open Data in machine- readable formats (XML, RDF, xls, CSV, HTML)	
Availability to attach files	31-50%
Opinion polls	
Calendar listing of upcoming e-participation activities	
Open Budget	
Links to social networks	
FAQ section	
Research results, analytics	
Regulations and law online discussions with citizens	
Archive on responses by government to citizens' questions, queries and	
inputs	10 200/
Safe identification system	10-3070
Access to special features from home page	
E-voting on matter of public policy	
Feedback analysis	
Blogs	
Chat rooms	
Open Budget in machine-readable formats	
GIS, maps	
Page for IT-developers	
Additional analytical tools, online calculator	less than 10%
Web casting	1035 than 1070
Demand assessment (popularity rankings etc.)	
Applications based on Open Data	
API on open budget	
API on public reports	
Source: Web-monitoring results, 2014	

 Table 2. Presence of Online Services 4 Stage indicators, %

According to web monitoring, there is lack of publication the feedback of citizens treatments on official web-sites. It's recommended to publish frequently asked questions and targeted answers to citizens' complaints, to develop API to access information about visits on sites. There are several elements of e-participation tools on web-sites (polls, chat rooms, blogs etc.). At the moment it's difficult to track complaints, there are no links to e-petition portal (Russian public initiative), to single portal of information disclosure and open data portal.

As stated in regular UN reports, Russia has managed to make a giant leap in EGDI ranking in 2012 thanks to reinforce the creation of the federal online services portal. In the ranking, published in 2014, the Russian Federation has retained 27th place, which indicates the need for careful analysis of the factors that may contribute to the positive dynamics. The authors recommend to develop e-participation tools in Russia in order to achieve the same significant progress that has been reached by online services portal creation.

# 5. Conclusions

Web-monitoring conduction in Russia, the adjustment methodology and research results allowed researchers to draw the following conclusions:

- 1. International methods can be applied to assess e-government and e-participation development at the national level. These methods are suitable for the assessment process at the federal level. For research at regions and municipalities it's needed to clarify the methodology in accordance with regional specific. Even taking into account EGDI as landmark of development (stated at federal level), its indicators should not copy blindly at regional level. Following the UN methodology was determined by Russian authorities indicators. While conducting research in other countries its important to study the program documents first with the purpose to find KPIs related to the specific area. The list of assessment indicators couldn't miss its criterion also.
- 2. The study revealed some limitations on the applicability of web monitoring techniques for different types of information resources: governmental websites and online services portals. This clarification should be considered by researchers from those countries where government services are presented on online services portals onle and services not related to government sites.
- 3. Additional statistical tolls should be applied to determine regional difference. In this study the authors applied regional division into four groups distingiushed by progress in online services implementation. This division is closed to normal distribution.
- 4. It's strongly recommended to develop coordination between the responsible authorities to publish departmental statistics on their websites, as well as the presentation of statistics and web-monitoring results on a single public web-site. Using this update data the researchers could ad multy-factor analysis for comlex index development.
- 5. For e-participation development, it's necessary to optimise web-sites for mobile devices, to create useful mobile applications using electronic services, payment services (applications must be demanded by citizens and should be developed for all major mobile platforms iOS, Android, Windows Phone, Windows 8), as well as to present API for open data and other public information.

Testing the UN methodology at national and regional levels is extremely useful for the construction of monitoring systems for e-services and e-participation assessment at the level of inter-state associations, such as the Eurasian Economic Union. The authors believe that combination of supply-side assessment with demand-side measurement (polls, downloads, registrations, citizens' feedback) could bring a complex picture of egovernment and e-participation development.

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