

Review paper

ANALYSIS OF EGOVERNMENT SERVICES AS A TOOL FOR MEASURING THE DIGITAL DEVELOPMENT OF MONTENEGRO

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Abstract. *Strong need for the application of information and communication technologies in everyday work has resulted in helping the public administration to face many challenges. Difference in degree of development between societies, social groups or individuals is in direct proportion with the difference in the degree of utilization and application of information and communication technologies. Only information societies in which knowledge and timely, comprehensive and accurate information are basic management resources can ensure the progress and future of its citizens.*

Increasing the efficiency and transparency of the public sector through the use of information and communication technologies is changing the way public administration functions and is causing changes in terms of the skills that both an employee in public administration as well as citizens who want to take advantage of the ICT supported services need to possess. Organizational changes necessary for the efficient functioning of public administration in the information society must be analyzed in detail, and in this manner implemented. In addition, the rapid development of technology and the paradigm change that comes with it, brings with it the necessary increase in socio-economic research in order to ensure the formulation of policies that will meet the needs of the information society.

The aim of this paper is to assess the state of development level of eGovernment in Montenegro, on the basis of which the degree of digital development will be determined. The analysis will start from the hypothesis that a certain well-known indicators, generally used throughout the world to assess the level of development and sophistication of eGovernment solutions, can be applied in order to create more detailed and more analytical insight into the level of development of these solutions, and, in general, the digital development in Montenegro.

Key Words: *eGovernment, information-communication technologies, digital development.*

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INTRODUCTION

In the last two decades, the government's information systems have significantly changed their role: from the relatively trivial function of back-office functions to a very important element that allows government organizations to be more reliable, more efficient and more effective. Even before the revolution that brought with it the emergence of personal computers and the Internet, most government officials, including top managers, paid little attention to computerized information systems. Information systems were primarily used for creating routine reports and transactions such as payrolls and various payments. Today, information technologies are a major asset which should be properly managed. Information technologies have become an integral part of the work of most employees and are today used by citizens through different models and eGovernment initiatives. Therefore, today, managers need to understand how to build and manage information systems that meet their customers' needs - both users within the system and those outside the system. In this sense, it is important to realize that top managers and end users must have an active role in the planning and implementation of these systems, so that these systems were appropriate and meet the needs of all users.

Therefore, the focus should not be on the actual information and communication technologies, but on their use in combination with organizational change and new skills, with the aim of improving the quality of public services, democratic processes and implementation of development strategies.

This theme is reflected primarily in the fact that widespread use of ICT in public administration provides opportunities to improve the efficiency of state mechanisms, which affect the availability and quality of public services and increase opportunities for citizens to participate in decision-making processes.

1. EGOVERNMENT DEFINITIONS

Technology initiatives but also the reforms of the administrative processes and in general, the implementation of information and communication technologies in government, have lead to understanding that governments are made up of a dynamic mix of objectives, structures and functions. eGovernment initiatives are essentially efforts for complex changes, designed with the intention to use new and advanced technologies which are aimed to support the transformation of the operation and effectiveness of the government, incurred as a result of the introduction of new initiatives for more efficient operations and execution of operational functions of government. Key challenges for public administration in the 21st century are just creating eGovernment.

There are many definitions of eGovernment. Here we will take a look at the eGovernment definitions in broad and narrow sense. The Strategic Plan for eGovernment in the state of Texas (Department of Information Resources, State of Texas, January 2001) [1], defines eGovernment as: governmental activities using electronic communication among all levels of government, the citizens and the business community, including: acquisition and providing of products and services; giving and receiving orders, delivery and search of information, and complete financial transactions. Broader definition is given by Gartner [2], "eGovernment is a continuous process optimization of service delivery, participa-

tion and management of voters by transforming internal and external relationships using the technology, the Internet and new media."

Recognizing the implications of eGovernment's initiatives, it can be defined as - the possibility of obtaining government services using non-traditional electronic methods, allowing access to government information and completing government transactions from any place, at any time and in accordance with the requirements of equal access - giving the potential to reshape the public sector and to build relationships between citizens and government.

It is clear that eGovernment is not a goal for itself, ie. the use information and communication technologies in the management represents a tool of public sector reform in three directions:

- the public sector whose work is transparent (administration would have to be simpler and more accountable to the citizens)
- administration that serves everyone (the public sector in which center is the user, who respects every individual and provides personalized services) and
- productive public sector that is able to deliver the best for the taxpayers.

2. MEASURING EGOVERNMENT

As noted previously, information and communication technology can help public authorities to cope with the many challenges. However, the ICT by itself does not need to be the center of attention. Instead, attention should be given to the use of ICT combined with organizational change and new skills in order to improve public services, democratic processes and public policy, which is the meaning of eGovernment. eGovernment uses modern information and communication technologies, particularly the Internet, as an easier and simpler way to introduce information on public services to the citizens, and to enable them to quickly and easily perform transactions (various payments, registration, etc.).

To run any successful eGovernment projects, among other things, it is necessary to use clear indicators that can measure the progress. With the help of measurement/ evaluation indicators, it is possible to monitor the achievement of goals as well, which are, in most states, defined through relevant policy documents. Purpose of measurement indicators is to monitor progress in the field of eGovernment establishment, but also to create opportunities for the assessment of these activities, as well as to define future activities and goals. The main purpose is to monitor the development of electronic services for citizens/nationals and businesses, and to compare the achieved results with the results of the region.

Bearing in mind that different methods are used to measure the level of eGovernment development, one methodology will be used for this study, and it will be described below. The methodology used for this study is the methodology applied by the European Commission. Use of this methodology has enabled a creation of comparative analysis analyzing the level of eGovernment development in Montenegro in comparison with the degree of development of these services in the EU.

Aforementioned methodology uses 20 indicators to evaluate the progress (in the EU report on a sample of 32 countries) of eGovernment development. The distinction is made between so-called core indicators and proof-of-concept indicators [3].

Core Indicators - Core indicators are the measures that were used in previous researches. This measurement framework is mature and supported by the experience at the EU level and within Member States. Group of core indicators include: (1) Online sophistication of 20 basic services: The degree to which within the government/public services is allowed interaction and/or transaction between the administration and citizens or businesses. This measure covers 20 basic public services such as online tax, requiring permits, school enrollment and other services, (2) Complete online availability of 20 basic public services: The degree to which there is a fully automated and proactive delivery of 20 key public services. Comparison over time illustrates the speed and extent of harmonization of implementation in Europe, (3) User Experience: The degree to which one can easily use 20 basic eGovernment services. This includes aspects of usability, transparency, privacy and multichannel policies, as well as possibilities for users to submit their comments regarding the quality of service administration. The assessment is complemented by qualitative research in relevant areas: the needs and requirements of users and user satisfaction, (4) Portal sophistication: User Experience and portal assessment are supplemented by qualitative research regarding other user-focused related topics, such as the needs and requirements of customers and users satisfaction, (5) eProcurement visibility: Indicates the extent to which potential suppliers can find information and links to eProcurement web sites of the contracting authority; (6) eProcurement availability: for the stage prior to contract award: measuring the degree to which the procurement process is eEnabled during the phase prior to the contract award and that from the moment of notification, through requests for proposals, to contract award.

Proof-of-concept indicators - These indicators are now experimental and are presented for the first time in the survey in 2010. Measurement is therefore much less mature, compared to the previously-mentioned indicators, within which countries have a lot more experience with indicators. From 2010, in this group of indicators are: (1) eProcurement availability in phase after contract award: Analysis of the eOrdering, eInvoicing and ePayment services which are provided by eProcurement platforms in the public sector, (2) Maturity of "life events": researched the relevant services such as are: "The establishment of business" and "Loss and seeking employment", (3) Availability and use of key enabler: Assessing what are the organizational and technical frameworks that govern the implementation of the back-office "building blocks" such as eID, the credibility of the sources, the interoperability guidelines, the adoption of open standards and unique applications [4].

3. ONLINE SOPHISTICATION AND FULL ONLINE AVAILABILITY OF 20 BASIC PUBLIC SERVICES

Bearing in mind the importance of all of the previously mentioned indicators, both in terms of easier and better decision-making based on the results, as well as in terms of comparability of the level of development of Montenegro with the EU27+, it would be very important to conduct research on each individual indicator. However, as some services are still not fully (or at all) developed, only the research on online sophistication of 20 basic public services, was conducted for this study.

The model used in this research has been suggested in 2000 and began to apply in 2001. This model shows how businesses and citizens can interact with the public authorities. As already noted, the process of delivery of government services is described using

the following levels: (0) no information - information about the service is not available on the network or service provider does not have a website, (i) the information - the information about the service is only available on web (for example, a description of the procedure), (ii) one-way interaction - the availability of forms in electronic format with the option to download the forms and keep them on computers (blank forms can be printed), (iii) two-way interaction - interactive filling out the forms and sign in with the authentication (by filling out the form it runs the individual services), (iv) the transaction - the whole service is available on the web, filling out forms, authentication, payment and delivery receipts, orders or other forms of complete services via the network, and finally (v) targetization/personalization - the ability to provide automated, pro-active services. The fourth and fifth levels may be related to the "full online availability" depending on the service. The model is shown below (Figure 1) [4].

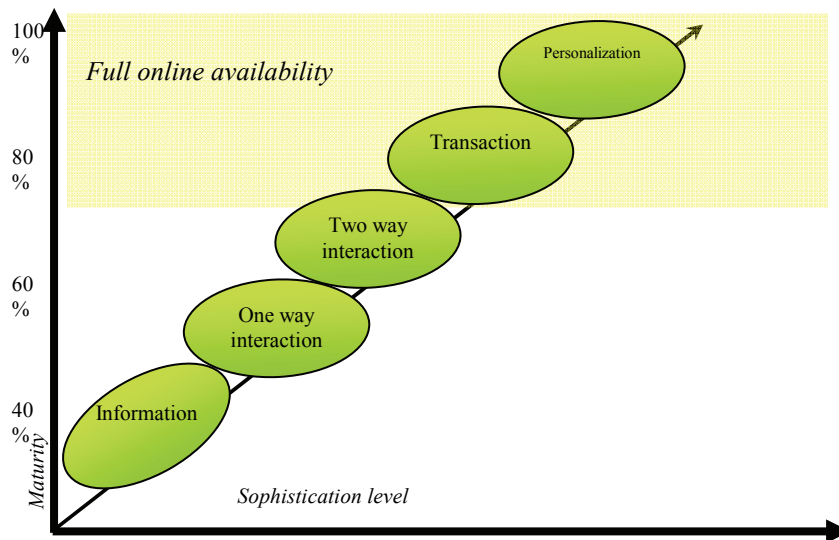


Fig. 1. Five-stage model assessment of maturity/the benchmark's five-stage maturity model

Five stage maturity model has been used to calculate the following indicators [4]:

1. Online sophistication of 20 basic public services and
2. Full online availability of 20 basic public services

The unit of analysis for the indicators of online sophistication and full online availability are the web sites of eGovernment service providers, regardless of the manner in which services are provided, ie. whether it is about multi-services (eg. portals) or web sites of specialized providers. These Web sites are evaluated on the basis of the aforementioned five-stages maturity model and for example it tests whether the sites are informative, does they allow one-way or two-way interaction, transaction, or they proactively provide certain services.

The research covers 12 services aimed at citizens and 8 services aimed at the business sector. Those services with a maximum level of sophistication together with definitions are described in the following table (Table 1) [4]:

Table 1. eGovernment services for citizens and businesses

20 basic eGovernment services			
Services for the citizens	Max level	Services for the business	Max level
Income Taxes	5	Social Contribution for Employees	4
Job Search	4	Corporate Tax	4
Social Security Benefits	5	VAT	4
Personal Documents	5	Registration of a New Company	4
Car Registration	4	Submission of Data to the Statistical Office	5
Application for Building Permission	4	Custom Declaration	4
Declaration to the Police	3	Environment-related Permits	5
Public Libraries	5	Public Procurement	4
Birth and Marriage Certificates	4		
Enrollment in Higher Education	4		
Announcement of Moving	4		
Health-related Service	4		

When it comes to the EU countries, bilateral interactions and transactions have become standards: electronic forms are available for most services; transactional - in other words called and full electronic support services - regardless of whether it is the case that a user logs in and receives services online, no additional paperwork, sharply observed standard in most countries. The fifth level, targetisation, is indicative of how the back-office and front-office are integrated, how the data is re-used and services provided proactively. The fourth and fifth stages together represent THE "complete online availability."

4. MEASURING THE SOPHISTICATION LEVEL OF 20 BASIC eSERVICES IN MONTENEGRO

A study about the sophistication level of 20 basic public services for Montenegro (12 for citizens and 8 for businesses) was conducted in January 2012 (and refers to the sophistication level of services in 2011). Ministry for Information Society and Telecommunications of the Government of Montenegro has conducted this survey for 2010. The research results will be used to provide insight into the eventual progress or stagnation, based on the comparative display, when it comes to the level of development of these services. Also, it is possible to make a comparison with other European countries, on the basis of data and results from the 2010 [4].

Research and evaluation of sophistication level of 20 basic public services is done via the Internet, ie. with analysis of (web) presence of the mentioned services and with use of already defined evaluation levels for each individual service. Thus, main sources of data used to measure the development and sophistication of eServices for individuals and legal entities are the Internet sites of state and local authorities who are responsible for specific services.

With analysis of the level of development and sophistication of 20 basic public services in 2011, the results showed that there was an improvement in the degree of development of eServices in Montenegro. In total, the sophistication level of eServices for citizens is 37%, whereas in the past year this rate was 36%. When it comes to eServices for businesses, improvement is also obvious, so in 2011 this rate was 61%, whereas in

2010 it was 45%. It is very important to note the growth of the sophistication level of eServices, both as part of the service relating to citizens, as well as part of services that relate to the company, which influenced the development of only 2-3 individual services. In the group of services that relate to the citizens, the shift in the development of the service relating to the obtaining of documents (certificates of birth, marriage, etc.) is obvious. When it comes to group of services for businesses, as opposed to services for citizens, three services are improved, ie. services related to social security of employees, sending data to the statistical office as well as public procurement service. Unfortunately, all other services are still, for the most part, developed only to the level of information. What is important is that there is no service that is not developed at all, ie. that is evaluated with 0.

Therefore, when it comes to services in EU member states, the degree of eService development for businesses is higher than the degree of eService development for individuals. More specifically, the average sophistication of services directed towards citizens is 24% lower than the services aimed at businesses. Such data are primarily a result of a smaller number of services offered to businesses, but it also illustrates extreme significance of eGovernment for the economy as a whole. So, this clearly confirms the hypothesis that certain, general indicators used in the world, for assessment of the level of development and sophistication of eGovernment solutions, can be applied and thus create a more detailed and more analytical insight into the level of development of these solutions in Montenegro.

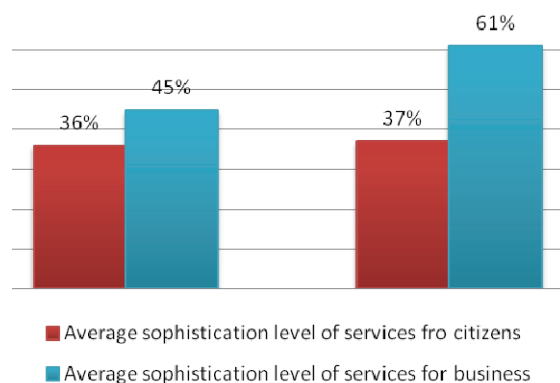


Fig. 2. Comparative review of average sophistication service for citizens and businesses in 2010. and 2011

The overall sophistication of 20 basic public services in Montenegro is 47%. Progress has been made in relation to 2010 by 9% (average sophistication was 38%). If we look at individual services for citizens and business, in part related to services for citizens, progress was 1%, while the progress has been much higher in the part of the services for corporate customers, and it is 16%. Since there are still no published data on the degree of sophistication of the EU countries in 2011, a brief overview of the results from 2010 will be presented here. In 2010, the overall sophistication of the 32 countries (the survey was conducted in the 27 Member States and five other countries, namely Croatia, Iceland,

Norway, Switzerland and Turkey) stood at 89.81%. Among 32 countries, 4 of them had developed the 20 basic public services fully, ie. its degree of sophistication is 100%, 15 countries have achieved the level of sophistication in the range of 90-99%, 7 in the range of 80-89% and 6 in the range of 70 - 79% [4].

Thus, it is clear that if we compare the data in Montenegro in 2011 with the EU average in 2010, Montenegro still lags behind most developed countries (the degree of sophistication in Montenegro is 42.81% lower than in the EU27 +).

The methodology also provides grouping of services into four clusters, namely: permits and documents, refunds, registration and registers and services related to the budget income; in this sense, relationships are shown in the following figures:

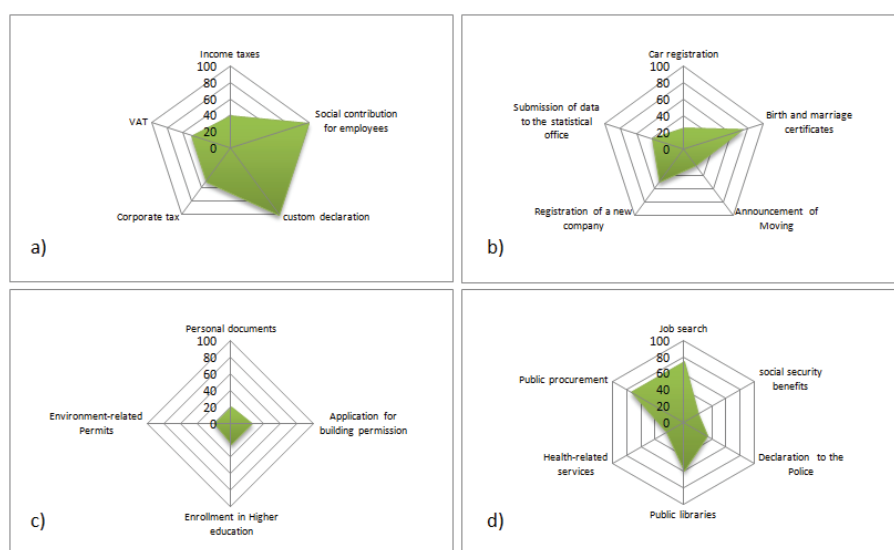


Fig. 3. a) Services related to the budget income; b) Registration and registers c) refunds, d) Permits and Documents

On the basis of the previous pictures, it is clear that some of the most developed services are those related to the budget income as well as services relating to refunds. Permits and documents are in the group of least developed services.

Results that are obtained can be analyzed in several ways, depending on the needs and goals of the analysis. If we consider the comparison of the degree of sophistication of services with regard to the previous year, it is clear that certain steps forward were made to the development of the service, but however, it is clear, too, that it's not enough. Although there is a practice that services for business are more developed than the services for citizens in all countries, in Montenegro progress is hardly made in the first group of services, namely, in the group of services for citizens. If Montenegro wants for its citizens to use services, it must take specific actions for developing these services, but also to promote of the information society, together with the increase of computer literacy and the increasing number of users of information and communication technologies. It is

therefore necessary to put emphasis on these services, in order to stimulate the citizens to use eServices, in the future strategies and action plans. On the other hand, a shift that has been made in a group of services that relate to the business clearly indicates serious efforts and intentions of policy makers towards the development of eGovernment. As already mentioned, companies are already using the benefits of eBusiness which means that they belong to the group of advanced users, unlike citizens, and generally, they are more likely to start using eServices, if these have been developed. In this sense, it can be concluded that some efforts are made in the creation and development of eGovernment (specifically in this case, the development of 20 basic public services); however, these activities should be much faster and more efficient. On the other hand, the development of 20 basic public services will increase public trust in the state system, especially if we are talking about the development of services for citizens. Bearing in mind that the application of ICT and the development of eGovernment services will make the work of the Government and governmental bodies more transparent and that will also allow two-way interaction and transaction when it comes to providing services (which cannot be possible if there is no confidence in the government system that provides these services), it is a fact that the application of information and communication technologies has a positive effect on the process of democracy, but it also allows citizens to have a more significant insight into the work of the Government.

However, if we talk about the digital development of Montenegro, apart from this very low level of sophistication of 20 basic public services, it is necessary to talk about the degree of use of these services. Such a formal research has not yet been conducted in Montenegro (it should be noted that only 2 out of 20 service are fully developed, so there's no point in conducting such a research). If we look at the survey that was conducted in 2011 (the survey was conducted by the Montenegrin Statistics office in cooperation with the Ministry for Information Society and Telecommunications of the Government of Montenegro) on the use of ICT in Montenegro in 2011, two facts are of great significance in further defining of the strategy for development of information society, and in general, the digital development of Montenegro [5].

When asked what are the reasons why the household does not have access to the Internet more respondents gave an answer that the equipment is too expensive (39.1%), compared to they have no need for the Internet (30.4%), Internet is too expensive (27%), etc. Therefore, based on these results, it is clear that: 1) there is a need to make the use of ICT available, through lower prices of equipment, promotional activities, etc. (eg. through creation of programs where the old computers are donated to the vulnerable groups of the population, etc.). In addition, answer that there is no need for the internet may be even more concerning! It is clear that if we do not offer services, then there will be no need for them! In this sense, this answer should be the starting point for for makers of eGovernment policies and action plans, and generally for policy-makers in further defining of the activities for development of information society in Montenegro.

On the other hand, it is interesting to note that the internet is mostly used for sending/receiving e-mails (81%), communication (59.7%), downloading games, images, movies, etc. (57.6%). Only 13% of respondents were reported they were used the Internet for private purposes (in the last 3 months) to search for a job or sending a job application (this data can not be higher in the current situation where services do not exist).

Action Plan (at EU level) defines the prerequisites that must be met in order to develop eGovernment [6]. These preconditions include: implementation and promotion of the interoperability between the borders (which will allow - among users - sharing of the information), the one-stop-shop approach to the development of the services, widespread use (eID solutions and frameworks for payments) outside the borders, ie. between different states.

If we have this in mind, then the question is what are the preconditions for development of eGovernment services in Montenegro. Unfortunately, in the case of Montenegro, we still do not talk about advanced services, but the basic eGovernment services that can be provided to the citizens and business.

Based on the previous, it is clear that the results and conducted research are confirming the hypothesis that for the evaluation of the level of sophistication in Montenegro, we can use common indicators, regardless of the quality of the data, but it also confirms the fact that it is possible to make a comparison between the level of development in the EU, with the aim to address future goals and priorities and thus affect the successful realisation and implementation of eGovernment.

CONCLUSION

From its very beginnings in the 90-ies, eGovernment has gone through many transitions and trends but also through changes in direction of development. Almost every country and Government around the world today has implemented eGovernment in some form and has its own vision, plans and goals for future development directions of eGovernment strategies. But even though all governments have many similarities in their functioning, structure and processes, implementation of eGovernment is never homogeneous. eGovernment can increase the speed and efficiency of performing operations through processes simplification, cost reduction, research capacity improvement and improvement of the storage systems ie. storage of documents and records. With use of appropriate technology, eGovernment can facilitate communication and improve coordination of the officials at various levels of government, from national government spreading through all levels, even down to the local administration. Success can be measured, in real terms, through its impact on all stakeholders involved in these processes.

In order to measure success, and to be able to define further steps of development it is necessary to implement the appropriate evaluations i.e. to measure the development levels and effects that implemented initiatives have both on the users as well on the implementers and stakeholders. In this regard, the conducted research of the development level of eGovernment services that is presented in this paper, clearly shows how Montenegro has been developed in the digital sense, when it comes to the services that government provides to the public, and what priorities need to be defined in future development of aforementioned services.

However, for different countries and governments, the approaches and priorities are different. For some, especially those who are focused on improving access to and delivery of services, this is primarily related to the front-end interface with customers and citizens. For others, especially those who are involved in the management and delivery of public administration, it refers to reducing costs and improving the effectiveness and efficiency

of the "back-office" as a basic "machinery" of governments and specifically eGovernment. For those who work at the transactional level, this means the elimination of barriers in international cooperation and development, as well as creating agendas of the globally interconnected governments.

Of course, to develop services that will be used, it is necessary to fulfill a number of technical and legal i.e. regulatory preconditions that would, among other things, enable the implementation of activities which will enhance and strengthen the eGovernment services in Europe, and specifically in Montenegro. These preconditions include primarily: (a) open specifications and interoperability as an important prerequisite for an open, flexible delivery of eGovernment services that can enable cooperation between administrations in Europe, (b) key enablers - technology of electronic identification (eID) and authentication services are very important in the implementation of security of electronic transactions (both in the private and public sectors) and (c) Innovative eGovernment - a new generation of eGovernment services should be based on the innovative technological approaches, and it should achieve benefits through them, such as clouds of public services as well as service-oriented architecture (SOA) in order to build open, flexible and collaborative eGovernment services while, at the same time, reducing ICT costs.

As very important issue of this and also future analysis a question should be made: whether Montenegro recognizes the needs for these changes and improvements? It is clear that it is not enough to simply develop solutions, as they must be continuously improved, especially as the technology and technological solutions are developed very quickly. Also, the new generation of users are very educated in terms of computer literacy, so it is necessary to provide the services that they will be able to use, and which have not been built on outdated technology solutions.

In addition, it is important to monitor the implementation of the Action Plans and evaluate the degree of development in order to enable a continued development of eGovernment.. Of course, within the framework of the Action Plan it is necessary to propose concrete and quality projects i.e. to set qualitative goals, so that even after a year later, after the development, quality results can be presented. These results represent a starting point for further defining plans and activities as well as for self-assessment of achieved results. In addition, it is recommended to periodically analyze obstacles, potentials, and to share the experiences in order to be able to define the future directions of eGovernment development.

Certainly, when it comes to comparative survey of the countries, we should bear in mind the premise that there are no two countries that are completely identical, and national plans in this regard create variables in relation to the public sector (including various levels of governments) and through the whole society. As a result, there is a fixed thread between mapping of the overall eGovernment trends and specific national plans and also how they relate to these trends. The presented study shows that Montenegro is far behind developed European countries when it comes to the level of development of 20 basic public services. These results should be a signal to policy-makers in further defining of the priorities and activities in order to enable, Montenegro (despite the fact it is a small country) to respond to the challenges in the digital world, imposed by the most developed ones. It is the size and population, where the different ICT solutions can be easily developed and implemented, that reflect the chance of Montenegro to take the high position on the scale of digitally developed countries.

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ANALIZA EGOVERNMENT SERVISA U FUNKCIJI MJERENJA DIGITALNOG RAZVOJA CRNE GORE

Tamara Đuričković

Snažna potreba za primjenom informaciono komunikacionih tehnologija u svakodnevnom radu ima za posljedicu pružanje pomoći javnoj administraciji da se suoči sa mnogim izazovima. Razlika razvijenosti društava, društvenih grupa ili pojedinaca u direktnoj je srazmjeri sa razlikom u stepenu korišćenja, odnosno primjene informaciono-komunikacionih tehnologija. Jedino informaciona društva u kojima su znanje i pravovremene, sveobuhvatne i tačne informacije osnovni upravljački resurs mogu da osiguraju progres i budućnost svojim građanima.

Povećanje efikasnosti i transparentnosti javnog sektora kroz upotrebu informaciono-komunikacionih tehnologija mijenja način funkcionisanja javne administracije i izaziva promjene u smislu vještina koje je potrebno da posjeduju kako zaposleni u javnoj upravi tako i građani koji žele da koriste prednosti ICT podržanih usluga. Organizacione promjene koje su potrebne za efikasno funkcionisanje javne administracije u informacionom društvu moraju biti analizirane veoma detaljno i na taj način i implementirane. Pored toga, brzi razvoj tehnologije i paradigma promjena koja sa tim dolazi, dovodi sa sobom i sva neophodna povećanja socio-ekonomskih istraživanja kako bi se obezbijedila formulacija politika koja će odgovoriti potrebama samog informacionog društva.

Ovaj rad ima za cilj da procijeni stanje nivoa razvijenosti elektronske javne uprave u Crnoj Gori, na bazi koje će se utvrditi i stepen digitalnog razvoja. U analizi će se poći od postavljene hipoteze da je određene poznate, i u svijetu opšte korišćene indikatore za procjenu nivoa razvijenosti i sofisticiranosti eGovernment rješenja, moguće primijeniti i time stvoriti detaljniji i analitičkiji uvid u nivo razvijenosti ovih rješenja i, uopšte, digitalnog razvoja u Crnoj Gori.

Ključne reči: eGovernment, informaciono-komunikacione tehnologije, digitalni razvoj.