

REGIONAL E-GOVERNMENT DEVELOPMENT IN THE VARDAR PLANNING REGION

Mimoza Bogdanoska Jovanovska¹, Megi Vasileska², Zoran Kotevski³,
Natasa Blazeska-Tabakovska⁴

Abstract

The revolutionary changes in society caused by the new information and communication technologies (ICT) forced countries worldwide to develop sophisticated solutions for digitizing processes in the public sector, a process known as e-government. The purpose of such application of ICT in the work of public administration is a better environment for the functioning of both: the citizens and business community, as well as the public sector itself, by achieving greater transparency, effectiveness, and efficiency in its operations. However, the benchmarking process that is established to follow the e-government development and exchange the best practices notice a significant disparity in the e-government implementation at the world level. The disparity is present also at different levels of organization within a country, and even it is not always measured. Such an example is the Republic of North Macedonia (RNM) with no equal e-government development at the central, regional, and local levels. The development of e-Government at the regional level significantly lags behind the development of this concept at the central level. Hence, this paper aims to analyze the development of e-government at the regional level. As pilot research, one of the country's eight planning regions is used – the Vardar Planning Region. In order to get a complete picture of the current situation related to e-government development, the focus of the research is on the official website of the Center for Development of the Vardar Planning Region. The research presents a longitudinal observation over a period of years, with information collected in two moments. The analysis of the research results indicated a low level of development of e-Government at the regional level, with room for improvements.

Keywords: e-government, public sector, regional level, Vardar Planning Region.

¹ Faculty of Information and Communication Technologies - Bitola, University "St. Kliment Ohridski" – Bitola, Partizanska bb, Bitola, RNMacedonia, mimoza.jovanovska@uklo.edu.mk

² Center for development of the Vardar planning region – Veles, Krali Marko bb, Veles, RNMacedonia, megi_vasileska@yahoo.com

³ Faculty of Information and Communication Technologies - Bitola, University "St. Kliment Ohridski" – Bitola, Partizanska bb, Bitola, RNMacedonia, Zoran.kotevski@uklo.edu.mk

⁴ Faculty of Information and Communication Technologies - Bitola, University "St. Kliment Ohridski" – Bitola, Partizanska bb, Bitola, RN Macedonia, natasa.tabakovska@uklo.edu.mk

1. Introduction

In the first decades of the twenty-first century, the world faces the challenge of a revolutionary transition to a new society where information and communication technologies (ICT) are essential tools for work, and information is the most crucial resource. This new Information Society changes human functioning in all areas of life both from a social and economic aspect but also changes the way of functioning of the sectors in society: business, non-business, and public. The public sector's changed way of functioning with ICT in the literature is known as e-government.

The introduction of the e-government concept has the task of improving the citizens' lives and reforming the bureaucratic way of functioning of the countries. Furthermore, as a longitudinal process with many phases, e-government development is the subject of measurement and benchmarking with the intention of not only locating the achieved level of development but also pointing at the reasons for such a situation and pushing countries for further e-government development.

The implementation of the e-government concept is growing rapidly. During the past years, out of a total of 193 member countries of the United Nations (UN, 2008), 179 countries had developed strategies for e-government, while already in 2012 that number increased to about 190 countries that have developed strategies. In the Republic of North Macedonia (RNM), although the beginnings of the development of e-government date back to 2000, it was only in 2010 that a National e-Government Strategy 2010 – 2012 was prepared for the first time (MIO, 2010).

Governments around the world are in different stages of e-government readiness and development, and mostly is an evident positive global trend of e-government development. Although, in general, the implementation of e-government recorded continuous growth during the entire period, measurements in 2018 rank our country in 79th place. So while the RNM is rated with a high index for the development of e-government (UN, 2018), the measurements carried out regarding the achieved level of sophistication of e-services show that the RNM still lags behind the average of the Union countries. The development inside the country is not a field of measurement, but even that is more than obvious that e-government implementation doesn't apply equally to all three levels: central/state, regional, and local/municipal levels. The current situation regarding the implementation of e-government at these three levels shows that there is a disparity:

- the analysis of the e-government project realization points out at lack of projects at a regional level,
- the development of e-government has the highest achievements at the central level,
- there are achievements at the local level that are close to those at the central level.

So, the focus of this research is focused on analyzing the situation of e-government development at this regional level as the less developed level of e-government.

The middle institutions that connect central and local government, on one side, but also citizens, civil society organizations, and the business community with government, on another side, seems that a simple analysis of e-government development at the regional level can be done by the analysis of the centers of planning regions. Therefore, for the purposes of this paper, in the role of a pilot project, the subject of analysis is the Center for Development of Vardar Planning Region (CDVPR) established in the Vardar Planning Region.

Furthermore, the paper is structured as follows: section two are introduced the main topics such as e-government definition, regional development in RNM, and the Center for Development of Vardar Planning Region. Then, the third section has presented the methodology used. The fourth section gives an overview of the results, and at the end, the fifth section presents conclusions and recommendations for further research.

2. An overview: e-government, regional level, Republic of North Macedonia

2.1. E-government introducing

There are enormous definitions and explanations of what e-government is. In the beginning, e-government was defined as the "use of ICT in public administration and public services delivery by Internet" (Bannister, 2007) to introduce this concept to save time and money for both users (citizens and the business sector) and service providers (public administration). It should enable easier access and simplified procedures for users in obtaining public services, increase administrative efficiency and build a transparent and democratic society (Mundy & Musa, 2010). Furthermore, this concept is seen as something that improves the governance process due to the difference in the traditional delivery of public services because it is electronic, not paper-based, 24/7 on client disposal, and gives information and service delivery no matter its complexity (Alenezi *et al.*, 2015). Today, e-government is elaborated as the introduction of ICT as tools of the public administration reform process with the task of reengineering administrative processes through the networking of institutions in the public sector with the purpose of data exchange, processing and storage (back office). The goal is to achieve the realization of electronic counter operations (online front office) and the provision of e-services that will meet the requirements and expectations of the stakeholders (Bogdanoska Jovanovska, 2022).

The development of e-government is a strategic priority of every state. It represents a planned and structured process through which organizational changes at each level (central, regional, local) are carried out inside the state institutions. This contributes to improving the quality of the service-level relationships between the government and its various stakeholders, such as the citizen, business and non-governmental sector and other government agencies.

2.2. Regional level organization in the Republic of North Macedonia

According to the Law on Territorial Organization of Local Self-Government, the regional level in the RNM consists of eight planning regions that serve statistical, economic, and administrative purposes. In order to carry out professional work of importance for the development of the planning region, one Center for the development of the planning region in each region was established. Each Center is connected with the institutions of the state in two directions: it cooperates with the municipalities that belong to that planning region, on the one hand, and it cooperates with the institutions of the central government, on the other hand.

The development of the planning regions is supported by establishing centers for development as public institutions. However, those institutions are facing a real problem related to the success of their operations, and in the relatively short period of existence, the development isn't at a satisfactory level. One of the reasons for the inefficiency and uneconomical performance of the centers is the low level of ICT utilization in communication, and interconnectivity with other public institutions, as well as citizens and businesses as its clients. Namely, there is a struggle to be organized to provide the necessary information and services for the business sector and civil society organizations from the region, while on the other hand, for the municipalities in the composition of the specific planning region.

As a pilot project for this research, we used the not-so-developed planning region – Vardar Planning Region (VPR) and the Center that is established – Center for Development of the Vardar Planning Region (CDVPR).

2.3. Center for Development of the Vardar Planning Region

The Vardar Planning Region (VPR) is one of the less developed regions in the RNM according to the Decision on the classification of planning regions according to the degree of development for the period from 2018 to 2023 (Official Gazette of the R. Macedonia" no. 234/2018). According to the data of the State Statistics Office for 2018 and according to the changes in the territorial division since 2014, 7.33% of the total population in the country lives in the region, and in 2019, 5,440 active business entities were registered in the Vardar planning region (State Statistics Office of the Republic of Macedonia, Business entities, last update 04/02/2020). The number of municipalities is 9 (municipality of: Veles, Kavadarci, Negotino, Demir Kapija, Rosoman, Gradsko, Chaska, Sveti Nikola and Lozovo and there are 216 settlements in the Vardar planning region (State Statistics Office of the RNM, Spatial units, last update 09.10.2019).

The city of Veles has a central place in the region, and it is the part of the municipality with the highest number of inhabitants, where the CDVPR is located. CDVPR is a legal entity established as an institution of the public sector to perform professional work of importance for developing the VPR. The Center participates in planning, implementing, and carrying out the professional and administrative-technical work of the Council for the Development of the Planning Region. The Center cooperates with local self-government units in the region and helps them provide professional and technical assistance and strengthen inter-municipal cooperation. The Center also provides professional services to civil

society organizations and other interested parties for the preparation of projects in the field of regional development. Its main task is to stimulate development at the local and regional level, strengthen the capacities of the networks in the local and rural community, and the business community, strengthen the principle of public-private partnership, and act in the direction of raising the quality of life. Within the framework of the CDVPR, an auxiliary body has been established-the Business Center for Support and Consultative Services for Small and Medium Enterprises (BC), which aims to help and provide support to micro, small and medium enterprises from the region. BC supplemented the existing services aimed at the business community in terms of quality - applicability, expediency, and quantity, and added value – an increased menu of services and scope of users. The BC was established to supplement and expand the services offered by the CDVPR to the private sector in the region. BC offers services to the private, public, and civil sectors, primarily in the area of general information, but also for the preparation of project proposals for national and international funds, mediation in the implementation of projects, services for the implementation of training for project management and strategic planning, services for creating analyses, campaigns, promotional events, participation in fairs.

2.4. The front-office benchmarking of e-Government

The e-government concept in RNM represents a logical follow-up to the global trend of:

(1) introducing ICT in all segments of society and

(2) starting the transformation process of how the state and state administration function to create a modern democratic society. This society will produce quality and economical government services. Furthermore, it will improve the relationship between citizens and government, bringing citizens and businesses closer to their governments.

The analysis of the existing benchmarks shows a wide range of benchmarks (Bogdanoska Jovanovska, 2016), including those that monitor the websites of public institutions (Bogdanoska Jovanovska *et al.*, 2013). According to UNDPEPA (UNDPEPA, 2002), a country's level of progress in e-government is partly dependent on the presence or absence of specific website features and services. Although there are divided opinions about this benchmark, it is still used. Along those lines, the Web Measure Index (UN, 2008) is used hoping that it "allows to benchmark ability to deliver online services to the citizens" and that "it can be a useful tool for developers of policies as an annual benchmark".

E-government benchmarking studies, which focus on the delivery of services over the Internet, and monitor institutions' websites are called supply-side oriented benchmarks that monitor front-office development. These benchmarks rely on indicators such as the number of online services available to citizens and business communities and the percentages of government departments with websites and websites that offer electronic services (Janssen *et al.*, 2004).

Many countries such as Great Britain, Australia, etc. have established internal benchmarking for measurement of e-government development at different levels (central, regional, local) but it is not the case with RNM. So this paper is

kind of the first step to initiating an idea on regional benchmarking on the supply side of the e-government development in RNM.

3. Methodology

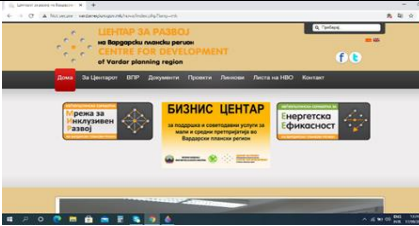
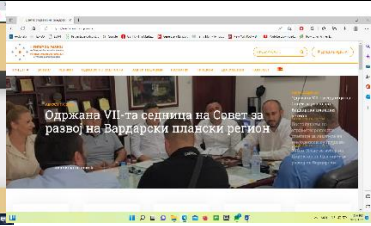
The research is qualitative, longitudinal, and with using observation as a method. The analysis for the development of e-government in RNM at the regional level was applied to one planning region Vardar Planning Region (VPR). The subject of research was CDVPR.

The research process has a longitudinal approach with two measurements realized in two moments July 2020 and July 2022. For the research purposes, the method of observation was used based on desk research of CDVPRs' website (5 websites of the CDVPR website). The research process scope, creating 14 indicators grouped into 5 groups. The findings are presented in the table. The table (Table 1) has three columns: the first one gives the indicator's name and description; the second column gives findings at the first observation in July 2020 and the third column gives observation at the second observation and July 2022.

4. Research results

The findings during observation are given at Table 1, and for each of five indicators we give a short description. As is it was mentioned above, the CDVPR's website was the focus of the research. The limitation of the research is that were observed only 5 websites in the scope of overall website of the CDVPR. The focus of the research mainly was: what kind and what categories of information has the existing websites; what is the technical and esthetic performance of the website; an analysis of existing or not existing e-services at the regional level; as well as indicators that point out at readiness for e-government or e-democracy. The characteristics of "user-friendly" and accessibility of the website, were also observed.

Table 1. Results of research

	Indicators	July 2020	July 2022
1. General data for the website			
1.1.	Availability	 https://vardarregion.gov.mk/	 https://vardarregion.gov.mk/
1.2.	Data of create	No data	September 2020
1.3.	Updates	No data/ longer than 90 days	On regular base
2. Content			
2.1.	Information	<i>Overall:</i> general information for the region. <i>Partly:</i> scope, organizational structure, council, budget, procurements, public relations, documents, projects....	Partly transform to overall + info for corruption
2.2.	Information structure	<i>Positive:</i> way of presenting info is simple/ many is understandable, drop-down list shoe up on click. <i>Negative:</i> not	<i>Positive:</i> Keep all positive + more info/ full pages/ many news <i>Negative:</i> promotion purposes still

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		enough info/ not clear structured/ focus on news in central part of the page/ empty pages/ only for promoting purposes.	present/ not clear structured info
2.3.	E-services	Website didn't offer e-services	The website didn't offer e-services
2.4.	E-services structure	/	/
3. Tools			
3.1.	E-democracy	Not functional e-survey	Functional – "e-idea"
3.2.	Communication tools	Basic contact data: address, phone numbers, e-mail, form to let info for client contact	Same + working time
4. Connection with other websites			
4.1.	Connection with other websites	There are link for redirection to other websites	same
4.2.	Manner of connection	Links at main page	Links to the websites of the municipalities at the bottom of the first page
5. User friendly (technical and esthetical)			
5.1.	Integration/ social media	Facebook и Twitter	+ Instagram
5.1.2	Meta tags	no	Meta tags are included without description
5.1.3	Popularity	8.333.318 place according to Alexa	It is not ranged
5.4.	Internal links	There are links with too long text or without any text	Same
5.5.	Headings	Very often no define titles, or it is no good define	All pages use define titles, but some are not good to define
5.6.	Content	On average 411 words per page	On average 834 per page
5.7.	URL format	пронајдени URL-адреси но не се добро напишани	Сите URL-адреси се добро напишани
5.8.	Images	There aren't defined sizes of pictures. The browser didn't change of any picture	75,0% of the pictures are without defined sizes at HTM, only at 25% of it the browser change it
5.9.	Responsive Design	It is not optimized for access from mobile phone or tablet	It is optimized for access from mobile phone or tablet.
5.10.	Server behaviour	Sent code for status 404 (http for not existing page); use GZIP coding; sometimes exist redirection (http 301); exist duplicate of the content that classify as two different websites (http://www.vardarregion.gov.mk and http://vardarregion.gov.mk)	Improved: not use GZIP coding/ exist redirection (http 301); follows best practice (http 301) for redirection from http://www.vardarregion.gov.mk to http://vardarregion.gov.mk
5.11.	Analytics	No use software for analytics	Use software for analytics
5.12.	Page titles	There are titles of the website pages	There are titles of the website pages
5.13.	Incoming links	The research on 5 pages of the CDVPR webpage point out at existing of 3.169 pages at 14 domains that link to this webpage. number of links constantly is change	The research/testing on 5 pages of the CDVPR webpage/ point out at existing of 7.669 pages at 153 domains that link to this webpage/ number of links constantly is change
5.14.	Printability	Not fully optimized for printing	Fully optimized for printing
5.15.	Contrasting	Automatic problems with color contrast	No problem with color contrast
5.16.	Speed	Slow (5,5 seconds at 4G connection)	Slow (5,2 seconds. at 4G connection)
5.17.	Navigation	Easy for main menu/ under-menu with drop-down/ max. 3-4 clicks	Same + additional menu at the bottom of the each page
5.18.	Search	Good	Good
5.19.	Accessibility (for disability users)	Not adapted	Partly adapted
5.20.	Multi-language	Macedonian and English (only for main titles)	Same + some text is translated

Source: The Authors

The results from "General indicators for websites" indicate that the CDVPR has an official website with a registered and functional gov.mk domain without correct information about the date of establishment. Therefore, it can only be researched when the domain was purchased but this is not taken as an authoritative fact and is not an indication of when the website was created and launched because the domain name and website are two different things.

The second group of indicators, "Content" indicates a wide range of information from different areas but mostly for promotional purposes – the website serves as PR tool for the CDVPR. Also, it was noticed that the information mostly isn't well planned and grouped into appropriate categories and do not provide a standardized user experience. In fact,

- only general information (structure, organizational set-up, information about employees, names, position and contact data, as well as information about the activity of the institution, legal regulation and internal organization, functions and competencies), on one hand,
- and general information of the region (history, geographical position, demography, infrastructure, education, culture..., on the other hand),
- as well as list of civil society organizations, are fully presented.

The information as: list and description of services offered, instructions, brochures and leaflets, forms, information on fees and deadlines are offered only in part. Budget information, such as budget projection (annual financial plans), current income and expenditure, final accounts, audit and financial reports, public procurement information such as annual public procurement plan, but less often have published detailed information on public procurement processes (including and contracts) are only partly presented. The information for active and completed opportunities for application, instruments, funds and calls are not published at website. While the news about realized events is constantly posted. It is missing a published calendar of future events and announcements.

Further, we find out that the CVRPR website does not offer electronic services. The only thing it offers is e-information for access to public information. It does not offer prescribed web forms/web forms for the services, but it does offer the ability to access and download published documents. This situation was improved at the second observation, two years later, on the way that partly information becomes overall.

The third group of indicators, "Tools" included in the research, indicate the website's opportunity and capacity in offering various tools for e-democracy and e-communication.

During the first period of on-desk research, CRVPR's website offered the possibility of an online survey (a tool for e-Democracy). Still, it was non-functional, outdated, and no longer exists – during the second observation two years later. Moreover, the communication tool available on the website was minimal: only e-mail and some social media. However, to achieve even more successful external communication, the website needs to offer other communication channels such as chats, mailing or even chat-boot that are non-existent during the research period.

According to the fourth group of indicators "Connection with other websites" it was find out that there is a partial connection between the web pages in the VPR. This is from the website of the Center through text

(outbound/outbound) links organized in a list. So it is possible to move to the official web pages of the municipalities from the VPR. A big drawback was that the municipalities are not connected with the Center electronically to exchange information and data (except e-mail communication).

The last group of indicators named as “User-friendly” covers the data obtained on the functionality and design, that is, technical characteristics and aesthetics of the analyzed websites. Namely, it is not enough to just make a website, but it needs to be well-designed, efficient, impressive, easy to remember, with the main emphasis on the user experience - all in order not only to keep the user's attention but and help him find what he's looking for. To get satisfied customers, every website needs to offer a quality product that will be maximally functional, simple, understandable and adapted to users' needs. To investigate whether the CDVPR webpage(s) are easy to use (user-friendly) and accessible, a series of tests were performed. The results show that the website does not use recognizable analytics software, so there is no data about visits, downloading information, market research, or evaluating and improving the website's effectiveness. page, etc.; the obtained results regarding the connection with social networks show that the CRVPR website has a connection with Facebook and Twitter. The website does not include metadata, i.e. it does not use a description tag that is improved at the second observation. In terms of popularity, according to Alexa, the website of CRVPR is ranked 8,333,318 in the world, while at the second measurement, it is still no ranged – no improvements on this field. The content on web pages strongly correlates with search engine rankings, and it is improved at the second measurement. Headings, as signposts for users and search engines, define which parts of web content are important and show how they are interconnected. They are used to improve the website's content, so they should be semantically correct. That should not be skipped. Many pages on the CRVPR website do not use defined headers, and some do not define the headers correctly, which is improved at the second measurement. The Center's website has well-defined page titles. They are used correctly, which is good because search engines display page titles in search results and also use them to recognize what information web pages contain. Ideally, page titles should contain the search term for which the website is optimized. Analyzing the web pages showed that CRVPR has a URL that is not so well thought out.

Further on, the main problem with links is the same description being used for more than one site, links on the website that use too long text, and links that do not have text describing their destination. The observation points out that:

- the CDVPRs' website handles missing pages correctly by sending a 404 HTTP status code;
- GZIP encoding/compression is used, which reduces the loading time of the web page;
- some sites follow the best practice of using a permanent (HTTP 301) redirect, and some do not.

Also, CRVPR has duplicate content, which is wrong because they are technically classified as two different websites, and search engines can lower a website's rank if they find the same content on two different URLs. Further on, firstly, the website wasn't designed to work on the small screen size these devices have which was improved at the second measurement. Also, the loading time was

long, but it was improved later on. It was found that the Center's website is searchable but hasn't good contrast between the content and the page's background, which is improved at the second measurement.

There was an improvement in the part related to the images, so now the browser resizes the images. The website now gives access to users with different devices and web browsers but not to all users regardless of their disabilities. Additionally, only the official language of the majority community in the municipalities is used for posting information. An English version is used only for titles and partially for some information (at the second observation).

3. Conclusion

The complete analysis of this research points out a deficient level of e-government development at the regional level in the RNM, based on the findings related to the VPR by measuring CDVPR's website. The results point out at the first level of e-government development (of five levels well known in the theory). As a result of finding that the CDVPR's website contains and offers only information and doesn't offer e-services. Those characteristics of the website fit to "Information phase" - the first phase of e-government development (Layne and Lee, 2001), which means: an online presence, cataloguing of information, no connection between public institutions, or possibility for –e-services realization. The research is very limited because it not includes back-office situation. Hence for future research we recommend widening the research process with including back-office, as well as widening to the other planning regions in RNM.

Considering the fact that there is still a small number of written materials on this topic in the Macedonian language, the paper itself can be observed as a type of contribution to the directions for future development of e-government in our country.

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