

ASSESSMENT OF WEBSITES QUALITY OF THE MINISTRIES OF THE REPUBLIC OF MACEDONIA

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Abstract: By using e-government websites, all stakeholders can receive benefits. Citizens can receive better and more convenient services, businesses can reduce their cost while dealing with institutions and governments can reduce operation and management costs. For more than two decades, governments around the world are making their services available online via e-government websites. However, there are determinants that influence whether constituents will embrace the use of e-government websites. The explored factors are based on information and system-quality aspects since the existing works indicate these quality aspects affect the use and user satisfaction. This study, primarily explores the factors that influence the adoption of e-government websites of all fifteen Ministries of the Republic of Macedonia. The research is performed using structured questionnaire that consists of several parts. The quality of the e-government websites was assessed by 6 parameters of the official websites and the binary choice of the answers on the chosen statements (I agree/ I don't agree). Graduate students were trained to perform the analysis by checking the ministries' websites. The first determinant is *Information quality* that was assessed by 4 statements. The second determinant of quality is *Information content parameters* assessed by 5 statements. The third quality factor concerning e-government websites that is analyzed is *Accessibility/ Navigation*. The *Usability/ Functionality/ Interactivity features* are considered to be the most important for achieving higher levels of the e-government websites sophistication. *Efficiency* and *Security/Barriers* were also assessed. From the analyses of the received questionnaires several conclusions can be made. Without doubt, information quality is perceived as satisfactory from all respondents. They agree that on all websites of the ministries information are accurate, on-time, relevant and precise. Concerning the second determinant –information content, the answers are mainly in line with the statements except the fact that on most of the sites there is no FAQs. The accessibility/navigation characteristics are viewed as satisfactory, except keyword search. The forth group of characteristics is assessed by 10 statements that reflect usability, functionality and interactivity. The results are more variable across the answers. Discussion forums for citizens and businesses are not present and online tracking of proposals is not possible. Transactions online are not available as feature. All ministries are present on social media. However, most of the respondents answered negatively when they were asked about the security. As an overall conclusion we can stress out that quality of the websites of the ministries of the Government of the Republic is satisfactory from the information quality and content, while parameters of quality such as interactivity and functionality are perceived as less satisfactory. Websites don't follow the same pattern, they are developed without compulsory functionalities and we can't find consistency in the solutions. However, the progress is obvious in the perception of the transparency, open data, information content and connectivity with the social media. Still, two-way interactions are not possible and that is the step that will be hard to achieve without improving the security and interoperability.

Keywords: e-government, website quality, Republic of Macedonia

ОЦЕНКА НА КВАЛИТЕТОТ НА ВЕБ СТРАНИЦИТЕ НА МИНИСТЕРСТВОТА ВО РЕПУБЛИКА МАКЕДОНИЈА

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Резиме: Со користење на веб-страници на е-влада, граѓаните можат да добијат подобри и подостапни услуги, бизнисите можат да ги намалат трошоците во контактите со институции, а владите можат да ги намалат оперативните и управувачките трошоци. Повеќе од две децении, владите низ целиот свет ги прават своите услуги достапни преку интернет преку веб-страници на е-влада. Сепак, постојат детерминанти кои влијаат врз тоа дали конституентите ќе ја прифатат употребата на веб-страници на е-влада и така ќе ги користат услугите. Истражувањето се базираат на аспектите на квалитет на информациите и системите, бидејќи во литература се укажуваат на тоа дека овие аспекти влијаат врз употребата и задоволството на корисниците. Оваа студија првенствено ги истражува факторите кои влијаат на користењето на веб-страниците на сите петнаесет министерства во Република Македонија. Истражувањето е спроведено со користење на структуриран прашалник кој се состои од неколку делови. Квалитетот на веб-страниците на е-влада е оценет преку 6 параметри на официјалните веб-страници и бинарен избор на одговорите за избраните ставови/карактеристики (се согласувам / не се согласувам). Студентите на постдипломските студии беа подготвени и обучени да ја извршат анализата со проверка на веб-страниците на министерствата следејќи го дефинираниот прашалник. Првата одредница е *квалитетот на информациите* што беше оценета преку 4 ставови. Втората детерминанта на квалитетот е *содржината на информациите* оценета преку 5 карактеристики. Третиот фактор на квалитет во врска со веб-страниците е *пристапност/навигација*. Функциите *употребливост /функционалност /интерактивност* се сметаат за најважни за постигнување повисоки нивоа на софистицираност на веб-страниците на е-влада. *Ефикасноста и безбедноста*, како и *бариерите* исто така беа оценети. Од анализите на добиените прашалници може да се извлечат неколку заклучоци. Без сомнение, квалитетот на информациите се смета за задоволителен од сите испитаници. Тие се согласуваат дека на сите веб-страници на министерствата информациите се точни, навремени, релевантни и прецизни. Во врска со втората детерминанта- содржината на информациите, одговорите главно се во согласност со изјавите, со исклучок на фактот дека на повеќето од сајтовите нема најчесто поставувани прашања. Карактеристиките за пристапност / навигација се сметаат за задоволителни, освен за пребарување на клучни зборови. За четвртата група на карактеристики резултатите се поваријабилни низ одговорите. Форуми за дискусии за граѓаните и бизнисите не се присутни и онлајн следење на предлозите/предметите не е можно. Онлајн трансакции не се достапни како функција. Сите министерства се присутни на социјалните медиуми. Сепак, повеќето од испитаниците одговориле негативно кога биле прашани за безбедноста. Како општ заклучок можеме да истакнеме дека квалитетот на веб-страниците на министерствата на Владата на Републиката е задоволителен, но параметрите за квалитет, како што се интерактивноста и функционалноста, се сметаат за помалку задоволителни. Веб-страниците не се униформни, тие се развиваат без задолжителни функционалности и не можеме да најдеме конзистентност во решенијата. Напредокот е очигледен во перцепцијата на транспарентноста, отворените податоци, содржината на информациите и поврзувањето со социјалните медиуми. Двонасочните интеракции не се можни и тоа е чекор што ќе биде тешко да се постигне без подобрување на безбедноста и интероперабилноста.

Клучни зборови: Е-влада, квалитет на веб-страница, Република Македонија

1. INTRODUCTION

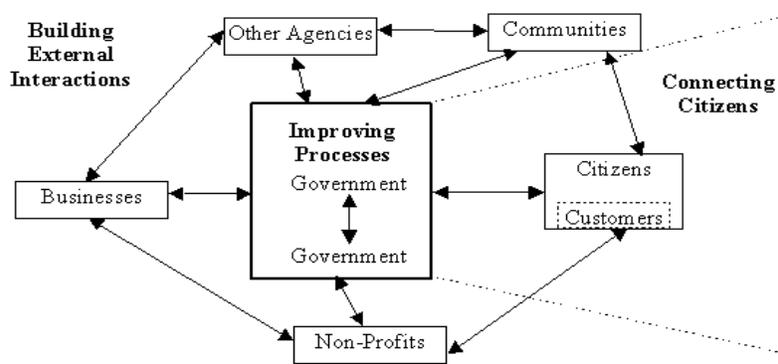
Digitalization in the context of public administration is known under the term e-government and it emerged in the late 1990s, although the history of computing in government can be traced back to the beginnings of computer history. Some definitions restrict e-government to Internet-enabled applications only, or only to interactions between government and outside groups. At the offset of the first wave of e-government, there are similarities in the definitions mentioning three goals: more efficient government, better services to citizens, and improved democratic processes (Grönlund, 2002). Nowadays, technological standards such as openness, usability, customization and transparency for public portals and interoperability between systems in agencies on different levels are a must for the implementation of e-government projects and are reflected in the definitions. Obviously, it is not only about services or technology; it is about reinventing the way in which governments interact with citizens, governmental agencies, businesses, employees, and other stakeholders (Löfstedt, 2005).

The term e-government is differently defined in the literature. Generally, it reflects the use of information and communication technologies (ICTs) in public administration to change structures and processes of government organizations (Löfstedt, 2005). But, the transition to e-government poses continuous challenges to Governments in

employing increasingly sophisticated websites as gateways to the information and services of government units (ministries). The high quality of those websites is needed for the successful adoption of e-government (Ziemba et al., 2014). Therefore the goal of this paper is to assess the quality and to explore the factors that influence the adoption of e-government websites of all fifteen Ministries in the Republic of Macedonia.

Generally, e-government means using information and communication technologies (ICTs) for supporting processes in government units, delivering e-services at different levels of maturity to government stakeholders (i.e. citizens, enterprises and government units); improving government transparency, citizen's participation, and democratic decision making; and cooperation, networking, and maintaining partnership relations between government stakeholders (Ziemba et al., 2014). There are three main domains of e-government: improving government processes or e-administration, connecting citizens or e-citizens and e-services and building external interactions or e-society, illustrated in Figure 1.

Figure 1: Domains for e-government initiatives



Source: Adapted from: S. Ntiro, e-government in Eastern Africa, KPMG, Dares Salaam, 2000, retrieved from <http://www.egov4dev.org/success/definitions.shtml>, accessed 15.05.2018

The most important goal of e-government is the delivery of faster and cheaper public services to citizens, business partners, employees, other agencies, and government agencies (Layne and Lee, 2001). One of the reasons why e-government is being adopted, is to strengthen transparency and accountability and to change the passive role that citizens as 'customers/clients' had (Dimitriu, 2008).

Having in mind that e-government is recognized as a major factor for achieving sustainable development for countries and society as a whole, the development of e-government is one of the strategic priorities of the country. The Government of the Republic of Macedonia has been making significant attempts to develop a proper framework for implementation of electronic public services (EPS) and the development of e-government. Over the past 15 years important steps were made in setting and developing of the national e-government infrastructure. Our country, guided by its aspiration to become an EU member state, starting from 2001 paves the way of modern e-society in general, with several important documents and national strategies focused to e-government. The first National Strategy for e-government was set for the period of 2010-2012. It incorporates the vision, goals and potential benefits associated with e-government. In the period that follows, the relevant documents of the Ministry of Information society and administration of the Republic of Macedonia, such as the National strategy for e-content development 2010-2015, the Public administration reform strategy 2010-2015 and the National strategy for e-inclusion 2011-2014 (MIOA, 2015) cover important projects in e-government services adoption and development. The current e-government strategy of the Republic of Macedonia is based upon a set of projects and initiatives which are stated in the latest Strategic plan of the Ministry of Information society and administration 2016-2018 (adopted in august 2015).

As a result of the Government's efforts to create a more efficient and transparent administration by presenting to the public all available services for both citizens and business entities the national e-government portal "uslugi.gov.mk" as gateway to access to information and services of the government units (ministries) was developed (MIOA, 2015).

Currently in the Republic of Macedonia among the most developed portals providing e-public services in the G2B segment are the e-public procurement (eProcurement system - EPPS), e-customs (the Single Window for Export/Import licenses and tariff quotas system - EXIM), corporate tax and VAT (the eTax service) and from March 2014, registration of a new company (the system for e-registration). The e-public services in the G2C segment are less developed in comparison with the G2B ones.

According to the latest UN e-government survey, the Republic of Macedonia is ranked 79th out of 193 countries by its e-government Development Index (EGDI), which represents a solid jump regarding 96th place in 2014, but a decrease regarding the 69th place in 2016. The EGDI (ranked 0-1) has increased in the Republic of Macedonia from 0.4720 in 2014, 0.5885 in 2016 to 0.6312 in 2018. In terms of the development of e-government and e-government index among the countries in the region, the Republic of Macedonia is ranked only ahead Bosnia and Herzegovina, while Albania, Bulgaria, Croatia, Greece, Montenegro, Serbia and Slovenia are ranked higher (UN E-Government Survey, 2018). Methodologically, the EGDI is a weighted average of Online Service Index, (OSI), Telecommunication Infrastructure Index, (TII) and Human Capital Index, (HCI). These indexes for the Republic of Macedonia score 0.7153; 0.4859 and 0.6924 respectively (UN E-Government Survey, 2018). In comparison to 2016, when the HCI was the highest component of EGDI (mainly due to the Government policies and measures in education), in 2018 the highest component is the OSI. Although the OSI is increased regarding 2016, from 0.6312 to 0.7153, the Republic of Macedonia must continue to focus its effort on improving the quality and scope of online services especially in the G2C segment. The lowest index in this group, as in 2016, is the TII, which means that the country must focus and follow the global trend in technology development.

Regarding the 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” (United Nations, 2013), the Republic of Macedonia is ranked 71 out of 193 countries with e-participation index - EPI of 0.7022. This represents a solid jump regarding 134th place in 2014, but a decrease regarding the 65th place in 2016. Methodologically, the E-Participation Index (EPI) is based on the following three components: (i) e-information – availability of online information; (ii) e-consultation – online public consultations, and (iii) e-decision-making – directly involving citizens in decision processes.

According to the available data of the State Statistical Office, in the first quarter of 2017, 73.6% of the households had access to the Internet at home. Almost all, 91.2%, of the households with Internet access had broadband (fixed or mobile) connection to the Internet. In the first quarter of 2017, 74.5% of the total population aged 15-74 used the Internet, and 61.9% used the Internet every day or almost every day. Of the Internet users in this period, 82.5% used a mobile phone or a smart phone for accessing the Internet away from home or work (State Statistical Office, Information Society, News Release 8.1.17.33). According to Eurostat, in 2017, 22% of individuals who used internet within the last year has used it for interacting with public authorities (Eurostat, 2018). The purpose of usage of EPS by individuals is presented in Table 1.

Table 1: Using the Internet for interacting with public authorities in the last 12 months

Purpose and type of internet use	% of individuals who used internet within the last year
Interaction with public authorities websites	22
Obtaining information from public authorities websites	16
Downloading official forms from public authorities' websites	13
Submitting completed forms (E-sending filled in forms to public authorities' websites)	9

Source: Adapted from Eurostat, <http://eurostat.ec.europa.eu/>, 2018

Regarding the e-public services in the G2C domain, one of the major priorities of the Government of the Republic of Macedonia is increasing the quality of administrative e-services to citizens. Therefore, the E-Documents Project is aimed to increase efficacy of state institutions and offer citizens quick, simplified and more efficient administrative services, through implementation of a solution that will enable electronic exchange of documents among institutions (www.mioa.gov.mk).

2. METHODOLOGY AND RESULTS

Websites are part of our everyday life and are used to exchange and to convey information between user and other parties. Despite website proliferation, assessment of website quality remains a challenging area of research (Herceg

and Kritzenberger, 2001). Quality relates to customer satisfaction and also with the level of accomplishment of user expectation when interfacing a website (Moustakis et al., 2004).

E-government websites/portals provide a single point of access to government services via the Web-enabled interface (Ziemba, 2016). Such websites deliver convenient online access to EPS for government stakeholders. Thanks to them, enterprises and citizens can interact with government units (ministers) as well as vice versa, government units can cooperate and communicate to all stakeholders. Therefore, e-government websites strongly influence successful adoption of e-government in general (Chua et al., 2012). By using e-government websites, all stakeholders can receive multiple benefits. Citizens can receive better and more convenient service, businesses can reduce their cost while dealing with institutions and governments can reduce operation and management costs. For the government, the more citizens use e-government, the more operation and management costs are reduced. For these reasons, governments around the world are making their services available online via e-government websites. In the literature, there are various definitions of quality and different theories i.e. models for assessing the quality of e-government websites. The quality and reliability, as well as accessibility and privacy of the e-government websites is a crucial factor for the successful implementation of the information society. Regarding the concept of quality it is considered multidimensional, consisting of many criteria like quality of service perspective, a user perspective, a content perspective or a usability perspective.

Having in mind the importance of use of the e-government websites, different approaches/frameworks of assessment of website quality of e-government have been explored in the literature in last years (Almalki et al., 2013; Ziemba et al., 2014). In general, for assessing the quality of e-government websites three aspects of quality are important: system, information and service quality. System quality can be viewed as a measure of e-government portals' functionalities and it is comprised of four constructs: usability, responsiveness, ease of access and privacy. Information quality is defined as the measure of the value which the information provides to a user. More specifically information quality can be described by four constructs: accuracy, dependability, coverage and ease of use. Service quality focuses on four others: empathy, interactivity, playfulness and aesthetic (Chua et al., 2012; Ziemba et al., 2014).

However, there are determinants that influence whether constituents will embrace the use of e-government websites. The explored factors are based on information and system-quality aspects since the existing research indicate these quality aspects affect the use and user satisfaction (Cullen and Hernon, 2004; Bevan, 1999). This study, therefore, primarily explores the factors that influence the adoption of e-government websites of all fifteen Ministries in the Republic of Macedonia. The research is performed using structured questionnaire that consists of 6 parts. The quality of the e-government websites was assessed by 6 characteristics of the official websites and the binary choice of the answers on the chosen statements (I agree/ I don't agree). Graduate students were trained to perform the analysis by checking the Ministries' websites. The first determinant is *Information quality* that was assessed by 4 statements (Accuracy- Information on e-government website is free from errors, Timeliness-Information on e-government website is up-to-date, Relevancy- Information on e-government website is relevant to the site, Precision- Information on e-government website is easy to read and understand). The second determinant of quality is *Information content parameters* assessed by 5 statements (Completeness-Information on e-government website is sufficient for the task, Ministry's agenda and priorities are on the website, Latest and upcoming events are on the website, Important announcements/decisions are on the website, Tenders announcements are on the website, Organizational structure (list of departments) are on the website/names of officials, FAQs are on the site, Relevant documents/laws are on the site, Relevant forms are on the site). The third quality factor concerning e-government websites that is analyzed is *Accessibility/ Navigation* (Site map/Description of how the website is arranged, Information in other languages, Keyword search, Visible link to return to the home page, Indicate Doc or PDF or image if linked as download, Effective use of dropdown menus/ tabs/hierarchical structures, Differentiate between links to internal pages and external websites, Categorization/visible grouping/logical structuring of information, Highlight hyperlinks on mouse over). The *Usability/ Functionality/ Interactivity parameters* are considered to be the most important for achieving higher levels of the e-government websites sophistication (e-government website is easy to use, e-government website is attractive, Online services are available, Online QA for citizens/businesses/ discussion forum, Pool for public opinion/ participatory feature, Online tracking of proposals, Links to social media, e-government website always works correctly, e-government website provides downloadable documents, Filled documents can be returned to government office -transaction online). *Efficiency* and *Security/Barriers* were also assessed (e-government website can save citizens/business time, e-government website can save citizen/business

money, e-government has insufficient instructions for the task at hand, Not confident that information transmission on e-government website is secure).

From the analyses of the received questionnaires several conclusions can be made. Without doubt, information quality is perceived as satisfactory from all respondents. They agree that on all websites of the ministries information are accurate, on-time, relevant and precise. Concerning the second determinant –information content, the answers are mainly in line with the statements except the fact that on most of the sites there is no FAQs. Tenders announcement are mainly present, but still there are ministries where public procurement information is not updated one regular basis. The accessibility /navigation characteristics are viewed as satisfactory, except keyword search. There is no accepted rule on the languages used on the sites, most of them are on Macedonian and Albanian, some also have English language as option, but there are sites without option to choose the language. There is not effective use of dropdown menus and categorization/visible grouping/ logical structuring of information in some ministries. The forth group of characteristics is assessed by 10 statements that reflect usability, functionality and interactivity. The results are more variable across the answers. Discussion forums for citizens and businesses are not present and online tracking of proposals is not possible. Transactions online are not available as feature. All ministries are present on social media. However, most of the respondents answered negatively when they were asked about the security. This lack of confidence is issue that should be addressed properly by the web developers and departments in the ministries responsible for information security. Respondents were not very satisfied with the possibility to get instructions for different tasks. As an overall conclusion we can stress out that quality of the websites of the Ministries of the Government of the Republic is satisfactory from the information quality and content viewpoint, while parameters of quality such as interactivity and functionality are perceived as less satisfactory. Websites don't follow the same pattern, they are developed without compulsory functionalities and we can't find consistency in the solutions. However, the progress is obvious in the perception of the transparency, open data, information content and connectivity with the social media. Still, two-way interactions are not possible and that is the step that will be hard to achieve without improving the security and interoperability.

3. CONCLUSION

The process of e-government development and adoption is constantly changing. Determining the significant factors that influence the use e-government websites can help policy makers to react in specific directions in order to improve utilization of e-government benefits. E-Services have to be designed and implemented to meet the complex and evolving service needs of citizens and other clients (businesses), and websites quality of the EPS providers should support that complex dynamics. The quality and reliability, as well as accessibility and privacy of the e-government websites is a crucial factor for the successful implementation of the information society. Regarding the concept of quality it is considered multidimensional, consisting of many criteria like quality of service perspective, a user perspective, a content perspective or a usability perspective. Thus, user awareness of these services, their willingness to use them, and ease of use all are important factors for the further development of e-government.

The Government of the Republic of Macedonia is focused on providing more efficient and user focused methods for delivering e-services. But, regardless their multiple benefits from economic and social character, the level of EPS usage among citizens is still on a very low level in the country. Therefore, the results of this study can serve as a good base for further research in this scientific area. More important, the results can be used as a guideline for policy makers in the country when improving current or implementing new EPS, as well as a motive to improve the quality of Ministries' websites.

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