The role of Croatian counties in e-Government and e-services development

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Abstract. *The main precondition for e-Government and e-services development in Croatian counties is to have a certain level of ICT resources.*

This article will present the state of available ICT resources, in accordance with the survey conducted in Croatian counties in 2013.

A very important subject, in the context of e-Government and e-services, is law regulation which has to be applied in the process of development. The Ministry of Public Administration is the competent body for strategic planning and implementation of e-Government and e-services at the state level. The Ministry provides e-services for citizens at the state level, and businesses and counties use these services. It is G2G connectivity.

The autonomous scope of Croatian counties is regulated by the Law on Local and Regional Government. The areas for establishing new e-services will be determined by the number of citizens' requests or other stakeholders listed in official records in two Croatian counties in the period from 2010 to 2012.

Frequently asked requests will be recommended for further consideration as new e-services G2G, G2C and G2B, in accordance with laws and regulations.

In the end, the authors will present state of ICT infrastructure as a precondition and possible counties' services which could be transferred to e-services for establishing G2G, G2B and G2C.

Keywords. e-Government, e-service, ICT resources, Croatian counties

1 Introduction

"The Digital Agenda for Europe sets e-Government within a comprehensive set of measures aimed at exploiting the benefits of information and communication technologies (ICT) across Europe. At a time of highly constrained public resources, ICT can help the public sector develop innovative ways of delivering its services to citizens while unleashing efficiencies and driving down costs."[10]

The European Commission has articulated four challenges for The Republic of Croatia in the process of preparation for membership in EU and some of them are inefficient public governance at central/local level and weak involvement of partners[1].

Lindgren I. and Jansson G. have published the article about a conceptual framework of electronic services in public sector [5], and have discussed terms of e-government and public e-services. They cite Bekkers & Homburg and Taylor & Lips who say that in e-Government context, e-services typically deal with intangible goods such as exchange of information in order to receive permits, disbursements, register tax or similar. In fact, as some observers point out, e-government represents the realization of an information intense government. Consequently, e-services become a matter of managing information and the relationship between governments and citizens becomes an information based relationship. Authors Yildiz M. and Saylam Ahave say that the provision of government information and services, as well as opening of additional channels for political participation, transparency and accountability via informationa and communication technologies (ICTs) is defined as electronic or digital government [7]. In this article authors will accept the definitions mentioned above.

The Ministry of Public Administration designs strategy for e-Government and e-services development in the context of EU politics and develops main infrastructure for nationally relevant facilities. The research conducted by UN in 2012 gave the Republic of Croatia 30th and in 2010 35th position in the World e-government development ranking [12, pg. 32] .

The autonomous scope of Croatian counties refers to: education, planning and development of educational, healthcare, social and cultural institutions, healthcare, physical and urban planning, economic development, transport and infrastructure, maintenance of public roads, issuing of construction and zoning permits, and other documents regulated by special laws [9].

These public services of social and economic life are not directly covered by e-Government and e-services development strategy at national level, so they have to be considered by counties.

[1] European Commission - Position of the Commission Services on the development of the Partnership Agreement and Programs in Croatia for the period 2014-2020, Launch Event in Zagreb, 31 January 2013, http://www.mrrfeu.hr/default.aspx?id=1315

These statements gave the authors inspiration for this research. The authors wanted to find out the state of ICT infrastructure in Croatian counties in 2013. On the other hand it was important to find out what services are requested frequently and by whom. These services could be digitalised and offered to stakeholders for online use. The research hypotheses in this article are:

H_0: Anual investment in ICT in Croatian counties is not sufficient for development of e-services.

$H_{1:}$ It is possible to determine those public county services which are particularly required by the citizens for development of e-services.

$H_{2:}$ There are categories of county services requested by other public institutions in Croatia which could be digitalised.

2 Literature review

The e-Government development is topic which has recently been observed from various aspects. It has become a part of almost all global and EU development politics. ICT systems are now at the heart of government processes, but efforts are still needed to ensure they continue to improve the provision of government services [8].

In the context of the possibilities of Croatian counties and their role in e-Government and e-services development, there have been no published articles, yet.

The UN published United Nations E-Government Survey in 2012 [13]. The conclusions were:

- the efforts of countries at all levels of development are still affected by a lack of integration of administrative simplification with e-government development plans, lack of infrastructure and human resource capacity and a gap between e-services supply and demand;
- To ensure benefits, Member States need to have a clear strategic vision on development planning and establish a regulatory environment for promotion of access and use of newer technologies by the government, the private sector and the citizen;
- the whole-of-government approach helps build a transparent government system with interconnected departments and divisions, but why is integrated service delivery so hard, and what are the key lessons that can be extracted from reviewing the literature? The problem lies not with the technology but in the political challenge of rewiring a range of public sector programmes delivered by different levels of government –often with different qualification requirements – for the people;
- Availability of online public services ('supply-side') has been the primary focus of e-government studies and policymaking, but over the past years, citizen usage of e-government services ('demand-side') has also become a priority issue. An increasing number of governments, mostly in developed countries, are making greater efforts to increase usage of services. They start by recognizing that the benefits of e-government services are very much determined by the number and type of users of these services, and the frequency of their use.

The intention for effective e-Government is also to improve governance and enable citizens to become more involved in the activities of their governments, which was considered by Bertot. The role of e-Government as transparency and anti-corruption tool for societies was described by Bertot, J.C. et.al. [1]. Transparency in provision of public services is the most important requirement for taking control over efficiency and driving down costs.

Integration and coordination of e-government project at national level is a complex issue and it should be planned in strategic documents of informatization [2].

The implementation of interoperability, which enables exchange of information between two systems, nowadays is an important topic in European practice in the process of e-Government and e-services development. The Croatian Ministry of Public Administration has also determined the interoperability of e-Government and e-services projects as an important issue. It is significant because of exchange and usage of information between other systems of EU institutions. Hellberg and Grönlund have written about conflicts in implementing interoperability [3]. They say that relationships among public sector organizations are complex and involve not just economic and professional interests but also political and legal ones in a complex network interaction. The research concludes that challenges of interoperability are not just a matter of changing legal paragraphs, but rather depends on important values like safety, privacy, confidentiality, trust, efficiency and effectiveness [3]. The interoperability between state and county level of e-Government and e-services in Croatia also requires research since the development of e-Government and e-services of main counties activities have to be related with Croatian state e-Government and e-services system.

In the context of interoperability between two or more systems (back-offices) there is a necessity to change business processes, actually to pay more attention to business process reengineering. Most failures in the implementation of e-Government projects have been caused by inability of governments to change business processes [6]. The example of good practice of collaboration and integration between local authorities in the UK is presented in the article by Weerakkody, V. et.al. [6], while the need for making cultural changes in the organization is emphasized. The example of a Dutch e-Government project is also presented in the same article. The large number of services have been made available online and in 2007 a reduction of 17% of the administration was achieved. It was reported by World Bank as a worldwide best practice. Further reduction of 25% continued over the next four years. The importance of staff skills was recognized by management. They say: "We started by changing the organization and educating and training

the staff... this provided us with a head start to those who did not. Our organization was ready for transformation before we had the technology in place" [6]. The UK and the Netherlands experiences focus on seamless information flow across business functions and between organizations in the same supply chain in order to improve efficiency and speed of service. The technical aspect of implementation e-Government and e-services is just an extension; it is not the essence of change, so the authors suggested using a term t-Government, as transformation government.

The authors Jansen J., de Vries S. and van Schaik P. write about benchmarking of e-Government services. They say that main goal of benchmarking for government organizations is to improve their electronic services [4]. Benchmarking as a method of comparing a county's processes and performance metrics to best practices from other counties, could be used for improving collaboration between counties and for better provision services to citizens and others interested in county's services.

All perspectives of observing e-Government and e-services mentioned above will help authors to consider the role of e-Government and e-services development on the level of Croatian counties, as the regional self-governance units. What should counties do, in which order, where to start, what should counties have... ?

3 Sample and Methods

The survey consists of two parts. The first part is a survey done on all 20 Croatian counties and the town of Zagreb. Croatian counties and the town of Zagreb should fill-out the questionnaire which will help us to find out the data about the components of Information system: hardware, software, netware, dataware, orgware and lifeware which they use. In addition, the data about investments in ICT is required too. The next part of questionnaire consists of 17 questions for measuring opinions on some statements. Finally, counties are required to state the three most common requests (claims) made by natural persons, companies and what are the three or more governmental (or other) institutions which are frequently contacted.

The second part of survey sets up SQL parameters queries on databases of Varazdin and Koprivnica-Krizevci Counties. The databases result from the usage of the Document Management System in these two counties. The aim of this part of survey is to find out the exact data about the number of cases according to claims of natural persons, businesses or other institutions over the last 4 years (2013. included). The types of claims are also considered and retrieved. These data will be compared to data from first part of survey, and then it will be considered in establishing the G2C, G2B or G2G services.

4 Results

Questionnaires were sent to 20 Croatian counties and the town of Zagreb. We have received 9 answers or 43%. 5 of 9 questionnaires were completed and 4 had some unanswered questions, mostly about investments in ICT.

To estimate the reliability of sample examinees, the Cronbach's Alpha coefficient was used. Cronbach's Alpha coefficient in our survey was calculated using Statistica 8 software and it is 0,7295 (shown in a Fig. 1 1). According to that, the internal consistency of the questionnaire is acceptable.

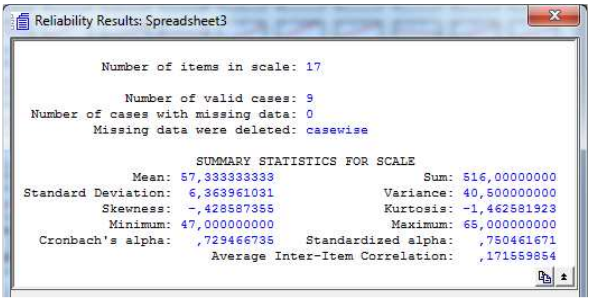

Figure 1. Cronbach's Alpha coefficient of internal consistency

The R i386 2.15.0 was also used as alternative software for Cronbach's Alpha coefficient calculations and the result was the same.

The percentage of overall budget invested in ICT is shown in Table 1. Only five counties have included investment data. Although 56% of examinees stated that counties are satisfactory and 33% that they are very well equipped with computers, servers, networks, programs and other equipment, there are still no findings obtained for development.

Table 1. Percentage of overall budget invested in ICT

County code	% of budget as invest. in ICT in 2010	% of budget as invest. in ICT in 2011	% of budget as invest. in ICT in 2012	% of budget as invest. in ICT in 2013
1	0,40%	0,46%	0,50%	0,09%
2	-	-	-	-
3	0,25%	0,25%	0,19%	0,16%
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	1,10%	0,91%	0,86%	1,06%
8	0,14%	0,20%	0,20%	0,04%
9	0,73%	0,79%	0,80%	0,84%

At the same time, 11% of examinees evaluates investments in ICT as unsatisfactory. 33% find the investments in ICT as most unsatisfactory. Only 22% of examinees think that investments are satisfactory.

Table 2. shows the number of computers and of IT experts per employee. Counties are well equipped with computers and every employee has at least one computer to work on.

Table 2. The number of computers and IT expert per emloyee

County code	No. Computers per employee	No. ICT expert per employer
1	1,24	0,01
2	0,47	0,02
3	1,19	0,04
4	1,65	0,02
5	1,54	0,04
6	-	-
7	1,25	0,01
8	1,16	0,03
9	1,62	0,02

Counties heavily depend on Microsoft technology, since 80% use Microsoft server operating systems, and 92% Microsoft desktop operating systems.

The virtualization is used by 67% counties, and 40% of them use Hyper-V technology for virtualization.

There are some organizational problems with server rooms, since 44% of counties report that there is no server room and 40% of counties have a server room but find it inadequate.

All counties have some kind of a backup strategy, and 67% of them have daily backups. Only 25% of counties keep backup copies on distant locations and 42% keep backup copies in the same building.

All counties have local area networks in their buildings and 89% of counties have all computers connected. 94% of counties do their business in more than 2 locations, and there is no county which works in only one location. 78% of the counties connect all distributed locations to the central location using some kind of VPN connection. All counties are connected to the Internet and use broadband Internet access, while 56% of them use fibre channel, and 44% use ADSL.

Electronic signature is used by executives in 56% of all counties, and 78% use internet banking. At the same time, 44% of examinees find such an exchange of electronically signed documents impossible.

Counties use all kinds of different applications and 56% of examinees think that applications that they use are satisfactory.

Examinees (56%) think that communication and collaboration between counties isn't satisfying. 22% find it only partly satisfactory and no one thinks that it is satisfying. Communication and collaboration between counties and municipalities on their territory is evaluated as partly satisfying (67%) and 11% as completely unsatisfying. Communication and collaboration between counties and public companies is evaluated as most unsatisfying (56%) and 33% evaluate it as only somehow satisfying.

The second part of survey, as stated earlier, comprises setting up SQL parameters queries on databases of Varazdin and Koprivnica-Krizevci Counties. The main goal was to retrieve CLASSEs of document which are most requested by individuals, companies or institutions.

Table 3. shows the top 20% of individual's and business requests in regular procedure as candidates for consideration for establishing G2C, G2B or G2G services.

Table 3. The number of top 20% of individual persons and business request in regular procedure

CLASS CODE	No. Of Top 20% of Individual's requests	No. Of Top 20 % of Business requests
112	241	2
320	977	151
350	1174	845
351	19	232
361	2742	372
363	90	65
400	7	135
402	451	296
602	67	446
604	1918	2
610	225	180
920	3	136

Table 4. The number of top 20% of individual's and business requests in administrative procedure

CLASS CODE	No. Of Top 20% of Individual persons request	No. Of Top 20 % of Business requests
112	133	1
350	169	221
351	14	47
361	4741	226
510	118	32
550	11	0
612	4	16

Table 4. shows the top 20% of individual's and business requests in administrative procedure, as basis for future consideration for establishing G2C, G2B or G2G services.

Examinees encompassed in the first part of the survey say that CLAS code of most requested claims for individuals are: 602, 604, 350, 361. For businesses they are 320, 403, 402, 350.

It can be concluded that opinions of examinees and the data extracted from databases are complementary.

5 Discussion

As stated in chapter one, the three research hypotheses were set up:

H_0: Anual investment in ICT in Croatian counties is not sufficient for development of e-services.

H_1: It is possible to determine those public county services which are particularly required by the citizens for development of e-services.

H_2: There are categories of county services requested by other public institutions in Croatia which could be digitalised

The first part of the survey aims at confirming or dismissing H_0, where the opinion of examinees on sufficiency of investment in ICT and the data on investments in ICT from annual county budget were requested. It is clear that all counties spend less than 1% (except for one county which plans 1,09% for this year) of overall budget on ICT in the last 4 years. At the same time, 11% of examinees evaluate investments in ICT as unsatisfactory. 33% find investments in ICT as most unsatisfactory. Only 22% of examinees think that investments are only partially satisfactory. It can be concluded that percentage of budget spent on ICT is very low and there is no available funding for developing new services. All arguments considered, the hypotheses H_0 is confirmed.

The second part of the survey is used to confirm or dismiss H_1, H_2, and the confirmation of database queries was requested from the examinees in the first part of the survey. According to results from database queries, the top 20% of requests from individuals and businesses are revealed in regular and administrative procedure. These top 20% requests are basis for establishing G2C, G2B and G2G services. These types of requests are almost completely confirmed by the in opinions of examinees in the first part of the survey.

The possibility for further research might be in the field of content analyses of frequently asked requests and business process analyses in order to provide G2C, G2B or G2G services.

6 Conclusion

In this paper the topic of e-Government in Croatian counties has been researched, because there were no previous researches conducted about the role of Croatian counties in e-Government development. Most of the state public documents about e-Government are on state strategies and reports concerning achievements in the Republic of Croatia. The other level of governance in Croatia is local self-government, which means cities and municipalities. The researches about e-Government in cities were mostly dealing with the maturity of web pages and services published on them.

The authors of this article decided to gather and process information about all necessary kinds of resources for e-Government and e-services development on regional (county) level. The main contribution of this article is the evidence provided about general situation in ICT in Croatian counties, as well as some suggestions for further planning period regarding:

- planning appropriate budget for maintenance of the existing ICT resources and for developing some new e-services,
- making business process analyses more efficient, less expensive and providing faster services to citizens, businesses and other governmental institutions,
- ensuring human resource development in ICT through education on expert skills
- ensuring the environment for human resource clustering for exchanging educated experts in order to improve ICT support
- organizing and presenting possibilities and needs for the improvement of interoperability between counties and state institutions.

According to the survey results, the communication and collaboration between counties has to be improved, along with communication with public companies and municipalities.

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