

# E-Government in Croatia: A Comparative Analysis

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*Abstract:* - This paper looks at the current level of implementation and possibilities for further improvements of e-government in Croatia. Given a brief history of e-government implementation in general, and in Croatia in particular, we do not have long and firm historical record. Thus, we analyze the issue given the available experiences along with the comparative analysis to several Central and East European countries (Bulgaria, Czech Republic, Estonia, Hungary, Poland, Romania, Slovak Republic and Slovenia). By doing so, we trace actual progress being made in implementation of information and communication technologies altogether and use of e-government and its potential in particular.

*Key-Words:* - e-government, ICT, Croatia, public administration, accountability, transparency

## 1 Introduction

The term e-government was virtually unknown a decade ago. However, the term, as an identified activity and as a research topic has grown dramatically. Even though research on this topic has expanded considerably, Heeks and Bailur [8] point out to a poor state of the research: "...viewed as the offspring of information systems and public administration – accused at times of philosophical, theoretical, methodological, and practical shortcomings – and shows all signs of having inherited the expected 'generic' profile".

Even though one may have negative view on the research so far, this area is still new and new research is done every day. This paper is a small contribution to that effort.

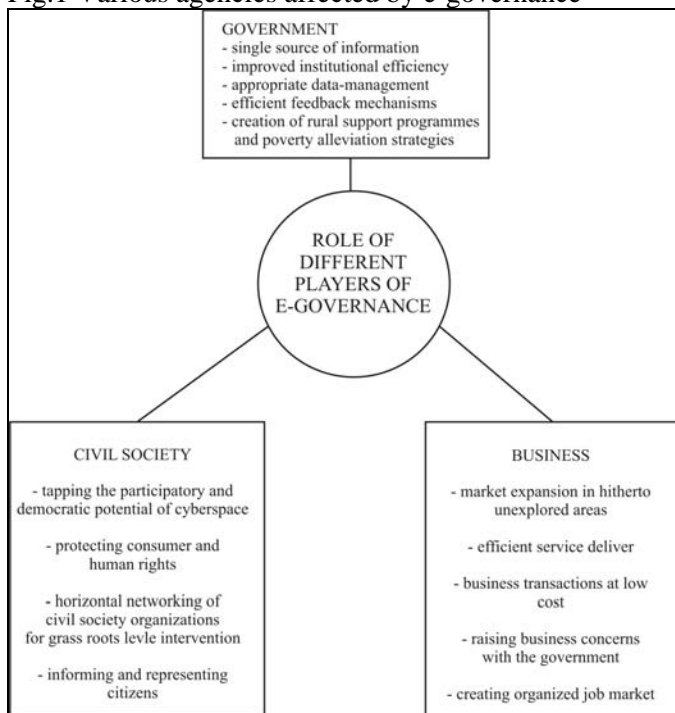
In this paper we first focus on the background and current analysis of e-government in selected Central and East European (CEE) countries, and after we give an analysis of e-government in Croatia.

## 2 Background

In order to define the term e-government, we use definition provided by Basu [9]: "E-government refers to the use by government agencies of information technologies ... that have the ability to transform relations with citizens, businesses and other arms of government". In terms of actually using these technologies following are some ends, better delivery of government services to citizens, improved interactions with businesses and industries, citizen empowerment through access to information, or more efficient government management. Benefits resulting from these activities could be less corruption, increased transparency, greater convenience, revenue growth and cost reductions. Singla [10] also distinguishes imperatives of e-governance as being anticipation, transparency and accountability. It is further argued that the interaction among different players in society (see fig. 1) should not only be every four or five years when elections are held. Information and communication technologies (ICT) have a potential to shift command

and control mechanisms both at the policy and implementation levels.

Fig.1 Various agencies affected by e-governance



Source: [10]

The reality is that large parts of population worldwide still avoid the Internet as a mean to communicate and interact with a government. These are mostly aging baby boomers who have not received any formal training in IT (ICT) technologies during their business careers and still prefer to conduct business as usual – face to face. This fact is being even more evident in countries of Central and Eastern Europe (CEE) where use of IT technologies was extraordinary rather than ordinary until late 1990s. Today, even though potential of ICT productivity growth has not yet been realized there is evidence that CEE countries do not lag behind best practices to a greater extent [23]. Every year large increments of population (mostly teenagers and students) enter the work force and face the need to interact with municipal and government authorities. The student population in particular and academic institutions in general are likely to make an effort to push the envelope and start thinking in the new way by adjusting the attitude away from traditional line of thinking in doing business [24]. Since graduating students acquired IT skills through their formal education, there is an additional pressure to communicate in the way they know well. Thus creating demand for on-line communication which makes implementation of e-government solutions economically viable.

When discussing e-government one distinction is in order. The distinction must be made when discussing e-government and e-governance. Marche and McNiven [1] explain that governance stresses the way in which decisions are made, while government stresses the way in which these decisions are carried out.

It is not very often that one reads hallmarks about the quality of government provided services. Titles talking about sluggishness of public administration are much common to encounter. Governments' justifications are generally based on the magnitude of public administration, diversification of demands from citizens, lack of ability to integrate various systems and inability of synergy among governmental departments. On the other hand, most of the large enterprises in the private sector, with equal, if not greater number of employees, seem to deal with these problems much better. As citizens are getting more acquainted with the functioning of a public administration (courtesy of various non-profit institutions and accessibility of government information from web services) on one side, and growing opportunity cost (loss of time) on the other, there should be at least an equal quality of service from the public administration.

The literature review in this field revealed also that many authors focus intensively on citizen – government relationship and try to find benefits resulting from ICT implantation directly between the two groups. There is, however, an intermediary between the groups exerting substantial influence on enhancing government – citizen communication and that is the media.

It is mainly agreed that citizens are primarily interested in e-government because of the possibility of interacting in a more efficient and convenient way. The media has a different role. Frequently, the role of the media is dissemination of information on government activities with accountability imposition for government actions. Furthermore, there is importance in bridging the information gap that media can accommodate. Many authors view the ICT as bringing politicians and their constituency closer together. The common term coined to describe this process is e-democracy. Cliff [16] describes e-Democracy as: "... representing the use of information and communication technologies and strategies by democratic actors within political and governance processes of local communities, nations and on the international stage. Democratic actors/sectors include governments, elected officials, the media, political organizations, and citizen/voters."

It is also important to stress that besides providing necessary infrastructure more needs to be done on attracting citizens and businesses for using the newly available services. Availability of e-government solutions by itself is not likely to yield an automatic response from businesses and individuals. There is

certain technology switching cost mostly stemming from lack of information and training, rather than from hardware problems. Thus, as with any technology, diffusion takes time even though solutions are readily available.

While developing countries face a problem of insufficient e-government infrastructure, developed countries face an issue of increasing engagement of constituency with available e-government services [13].

Latest UN report [14] indicates that Europe as a region has clear advantage in e-governance readiness compared to other regions. However, Europe is developed country and should be compared to other developed countries. The conclusion may well be that there is the advantage of Europe (mostly the EU), however, the advantage has to spill over to implementation if this apparent advantage is to be useful for furthering administrative efficiency, and promoting competitiveness and growth.

As the Economist [15] reports, even though online services should allow governments to serve their citizens much more efficiently, despite all the heavy spending, progress has been patchy. Most countries have provision of information online not the full interaction, which is labeled i-government. The next stage to full implementation of e-government would be m-government. M-government encompasses provision of services as before but using a different method of delivery, e.g. printing out a visa form and downloading the information onto a smart card or a mobile phone. The same technology should make it easier for politicians to connect with their voters (“e-democracy”).

Even though the steps of getting to the fully functional e-government solutions make a lot of sense, it should be noted that the dominant culture of respective countries may impede this process in a very peculiar way. Even though there may be a law on electronic signature and this method can be used safely and in the same manner as officially signed and stamped document, users of such document may still want physically “stamped and signed” document. Furthermore, it may be required in formal proceedings as credit application and alike, especially dealings with sensitive legal issues as ownership and registering ownership with respective institutions. Thus, it may be considered useless in formal proceeding even though electronic documents may be used.

Such a cultural impediment may exist not only in developing but in developed countries as well. Sometimes, technological gap is easier to close than the cultural gap.

Bertot and Jaeger [18] point out that in order to achieve cost savings in a citizen-centered government through e-government services, governments need to know expectations of e-Government services. In order to

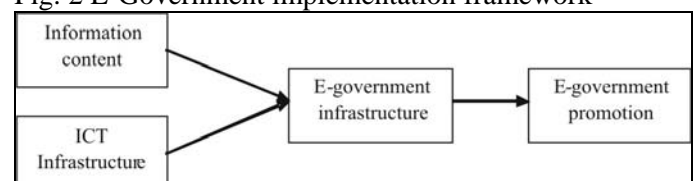
acquire the information the following should be implemented:

- Information and service needs assessment. There is a need to systematically ask citizens about their actual information and service needs.
- Technology needs assessment. Governments cannot assume that a computer and Internet access are sufficient to engage in e-government.
- Information and technology literacy. A key aspect of e-government service delivery and availability is the ability of citizens to successfully use e-government services.
- Government literacy. How users interact with e-government services will depend greatly on how well they understand the structure of the government.
- Usability and functionality. There is a need to engage in an iterative design process that encompasses user assessment throughout the service’s development process.
- Accessibility. Increasingly aging populations and others in populations have a range of challenges tied to their abilities to use e-government services.
- Meeting user expectations. Consistency between sites and services has not been a high priority, nor has consistency of the materials provided.
- Understanding how citizens actually use e-government services.

Failure in any of the above areas could lead to diminished use of e-government services and loss of confidence among citizens which would seriously hamper future development.

Chan et. al. [19] conducted a macro analysis of Singapore’s e-government initiatives where they traced first initiatives back to 1980s. First integrated e-government action plan was launched in 2000 and today a central web site exists, acting as a single gateway for accessing all governmental e-services. The analysis discovered four key components that could encompass all initiatives in development of e-government in Singapore and these initiatives are shown in figure 2.

Fig. 2 E-Government implementation framework



Source [19]

ICT infrastructure provides basic infrastructure and with information content form e-government infrastructure. The fourth component was employed to ensure widespread utilization of e-government

infrastructure. It is claimed that this model, although based on only one case, can be used as a universal model for guidance in e-government implementation.

Lau et. al. [20] discussed the adoption of e-government initiatives in three Latin America countries: Argentina, Mexico and Brazil. They aimed at analyzing each country as a successful model for e-government development in developing Latin America economies. The conceptual framework under which they analyzed respective countries revealed the following results. Argentina has the best indicators of e-government development among the three countries and is lagging behind Chile in Latin America according to e-government readiness indicators. Brazil, in spite of the smooth development of digital government and evident progress, still needs to develop some applications in order to provide full e-government services and capabilities. Mexico has a problem in antecedents of e-government development and that is above all low number of computer users in the country which will certainly hamper progress in the near future. Furthermore, the fact that most of the web sites are mostly informational is not a good news for Mexico. In this case it is evident that government-to-business services are more developed than government-to-citizens. It should also be noted that in analyzing these three cases it is evident that transition to digital government can be successfully facilitated through centralized office such as specialized governmental agency or a department.

Belanger and Carter [21] analyzed the impact of trust and risk perception of users' willingness to use e-government services. They developed a model that is a step closer to identifying the unique elements of trust in e-government and point out that government agencies involved in e-government initiatives should not hesitate in using solutions developed by e-commerce vendors in order to encourage adoption of e-government services. Furthermore, promotion of security of e-government by government agencies to citizens would increase citizens' satisfaction with government agencies. Government agencies should first emphasize their general competences and then highlight their ability to provide services through the Internet.

### 3 ICT Infrastructure in CEE

From Croatian perspective, e-Government is a noteworthy challenge not just for the public officials but for its citizens as well. Being a fairly young democracy, Croatia faces many transparency issues in government decision making (governance) as well as in enforcement.

According to the annual Transparency International Corruption Perception Report, Croatia holds not so

bright rank of 69 (out of 163 countries worldwide) with score of 3.4. Finland is a frontrunner of the list as the lowest corruption perceived country with the total score of 9.6 [2].

As in any other transition economy, transparency problems, implementation and corruption issues are dominant. These are also major objections by the EU on the way of accession to the Union. Just passing required legislature is not enough. Enforcement of laws is still an issue that needs to be addressed. However, e-government is seen as an accelerator in solving the above issues. If e-government capacities are fully installed then a part of transparency and corruption issues may be solved. This is still a long process due to obstacles associated with implementation of new technologies and issues with overall ability of the society to accept changes.

E-government solutions may not be epochal turning point technological achievements, but still require new knowledge and skills. Speed of diffusion of new technologies will largely depend on a country's learning or absorptive capacities and capabilities.

The diffusion process with famous discoveries, e.g. steam engine, took some 100 year before large benefits were acquired through railroad. Even with computer technology diffusion took some time before gains in productivity could be clearly detected. By the end of 1980s, productivity gains could still not be detected as a consequence of computer technology diffusion which was coined "Solow paradox". Even though computers were already very much present in economies, productivity gains could not be detected. Thus, again, diffusion process was long. However, productivity gains were clearly detected during the 1990s and later. The usual problems with new technology implementation are likely to be associated with implementation of e-government solutions as well. One should not be surprised if there is no immediate efficiency gain from e-government solutions since public administrations is much slower to change than businesses.

Historically, there are quite distinctive examples (e.g. Japan or UK) where countries had remarkable economic results but lacked the natural resources. However, knowledge was the resource they did not lack. E-government does not require natural resources, but requires knowledge on implementation, sequencing of implementation, and, naturally, education of users.

Commercial banks have spent a lot of resources to familiarize customers with the new ways of banking (e.g. ATMs, internet banking etc.). The same needs to be done for e-government solutions. If the system is implemented but there are no users, the whole system is useless. Tendency of public administrations to do useless things is always present but it should be curbed to a minimum. On the other hand, resistance by the public administration has always been strong. Such a resistance

may impede implementation of new technologies, which was very apparent in CEE countries with introduction of computers. The same may be expected with e-government solutions. In the end, it is not only about computers, actual persons are at both ends of communication.

The question is what should come first? Physical infrastructure, computer and Internet literacy, regulation in the field, or full e-government solutions? Historically, development of technology was always ahead of infrastructure development or regulations. However, with this in mind, solutions should be implemented given the level of social capabilities, thus implementing the right combination of e-government solutions with acceptable level of social capabilities. Otherwise, public funds may be spent without any benefit, even though it may reflect best world practices. However, best practices used by businesses might not yield efficient results in the public sector. The use of outsourcing by businesses should yield better performance of companies by focusing on core business. These actions may yield security issues and distrust by the public in the case of implementation by governments [25].

ICTs certainly do their part in enlightening the citizens on governmental actions and entice them to get more engaged in influencing public policy.

Technology solutions enable government to service citizens in a more timely, efficient and cost effective way [3]. As a prerequisite for effective e-government, as well as other e-initiatives, broader issues regarding ICT usage such as number of computers per household, availability of broadband internet access at fair prices, computer literacy of citizens, secure data exchange and much more needs to be considered (see fig. 3, fig. 4 and fig. 5).

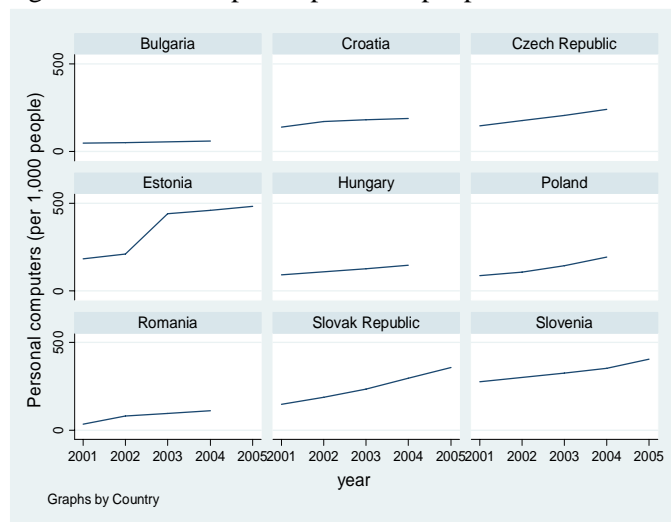
From figure 3 we can observe Estonia to be a frontrunner with a remarkable increase of personal computers number in the observed period. Behind Estonia are Slovak Republic and Slovenia with much more consistent development, and it seems much more sustainable development regarding the number of personal computers. Naturally, computers are the base for any development regarding e-government activities, but they need to be used in order to yield productivity increase. Other countries have a rather modest increase in numbers, but increase never the less. One should expect faster increase due to falling prices of computers and computer components, and improvement of computer literacy.

Croatia is lagging behind the frontrunners, even though improvement is visible. Croatia did not build up its ICT infrastructure and ICT literacy to its potential. Even though this gap can be overcome, for ICT literacy in particular, unlike physical infrastructure, some time will pass before full potential of e-government implementation is actually possible (social capabilities).

If citizens are not ready to use new technologies, a question emerges: is it now the right time to improve ICT infrastructure of the government? The answer is yes. As ICT gets more user friendly and as new generations complete their formal education (all the school in Croatia have Internet access, see fig.5) along with knowledge upgrading of others, full potential of e-government can be obtained in fairly short time. As Croatia ranks first for schools connected to the Internet, it should be stressed that this is due to the government decision to do so since 99% of all schools are public. The quality of infrastructure and availability of computers to students in schools is another issue. This is largely school specific. However, this is an important step to full implementation of e-government. It should also be noted that currently percentage of people with elementary school or less in Croatia is 40% which is a major obstacle to full implementation of e-government at the moment, and for any other e-activity for that matter.

Other countries in the sample are at the lower levels of schools connected to the Internet. However, this is not likely to be an issue in the future because this is in interest of both governments and businesses. For the governments it is important to have educated and computer (Internet) literate population in order to boost competitiveness. On the other hand, businesses want to have more customers who are computer (Internet) literate in order to use newly available services, distribution channels and products.

Fig.3 Personal computers per 1000 people



Source: [11]

Despite being a member of the EU and despite the fact that in the Soviet dominated block Bulgaria specialized in hardware and software, it has the lowest number of personal computers per 1000 people among the analyzed countries. Together with Romania it has the least developed IT infrastructure. Even though this is

actually may be true, there may be an issue with the data collection which is considered to be poor for these two countries.

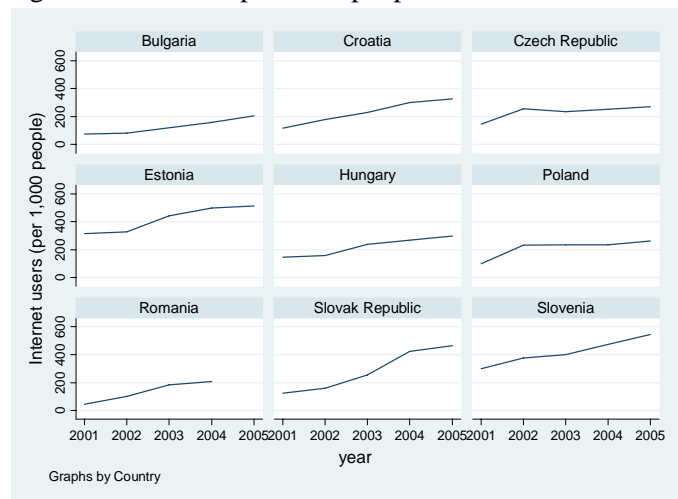
Data on ICT infrastructure for Czech Republic, Slovenia and other countries indicate overall favorable conditions for further development. Furthermore, Czech Republic spends more on ICT than was the average of (2004 data) EU 15 and is the leader with Slovenia in mobile telephony segment.

Estonia was the leader in Central and Eastern Europe in liberalizing fixed line telecommunication market which has certainly reflected on well developed IT infrastructure.

Hungary is well on the way to a fully developed IT market despite some minor difficulties in the process as well as Lithuania. [17].

However, these problems should be resolved in parallel with the actions of disclosure of government activities using the web as a dissemination tool. This view is somewhat analog to attitudes contained in the *Council Resolution on the implementation of the e-Europe 2005 Action Plan* [4] which stresses e-business, e-health and e-learning besides e-government, as well as other key areas in strengthening e-economy and e-Europe altogether. Overview of Croatia's current position and further steps that should strengthen e-competitiveness and subsequently better utilization of e-government initiatives, are stipulated in the *Operational Plan for Execution of e-Croatia Program with Overview of Activities in 2007* [5].

Fig.4 Internet users per 1000 people

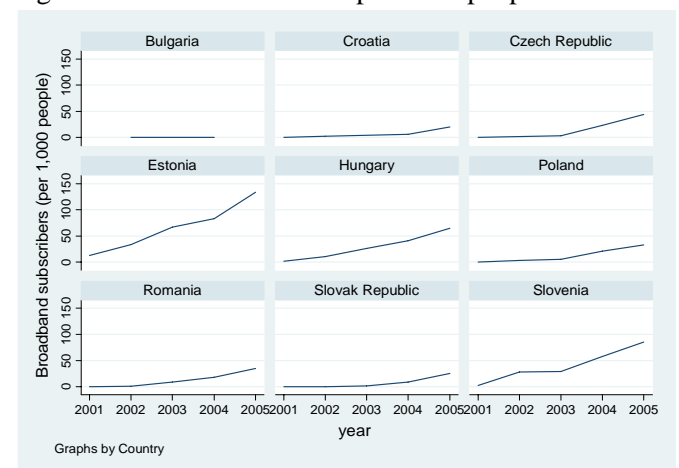


Source: [11]

From figure 7 we can observe number of broadband subscribers per 1000 people and GDP per capita. The data is collected for years 2001-2005, and presented as pooled data. Besides few data point that are far above the average, we can see that most of the sample is below the trend line. This indicates a very low involvement with

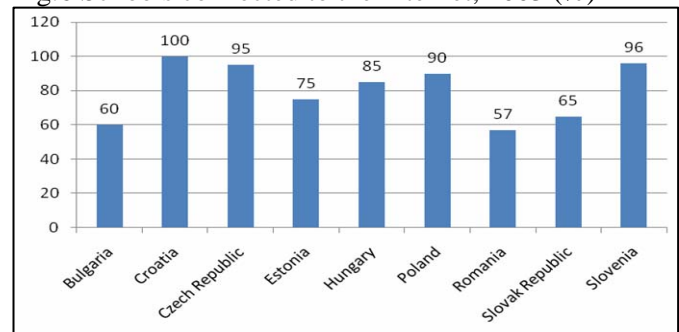
broadband in respective countries on average. This may be due to several factors. First, the price of subscription to broadband may still be prohibitively high for most of the population. This may be due to some monopolistic tendencies in the respective markets due to ill suited privatization of telecoms. In many cases, physical lines were a part of privatization, so the networks became private property of privatized companies, creating a monopolistic situation, even though market was liberalized. The only thing worse than a public monopoly is a private monopoly. It takes some time and effort to establish physical infrastructure before competitive forces can set in and lower the prices. With price decrease and increase of physical availability, there will be a further fall in prices and increase in demand. This would consequently facilitate benefits of e-activities (in our case e-government and e-democracy). The figures for GDP per capita are likely to increase over the next period in the selected countries which would further boost the number of Internet users and availability of product and services provided through the Internet.

Fig.5 Broadband subscribers per 1000 people



Source: [11]

Fig.6 Schools connected to the Internet, 2003 (%)



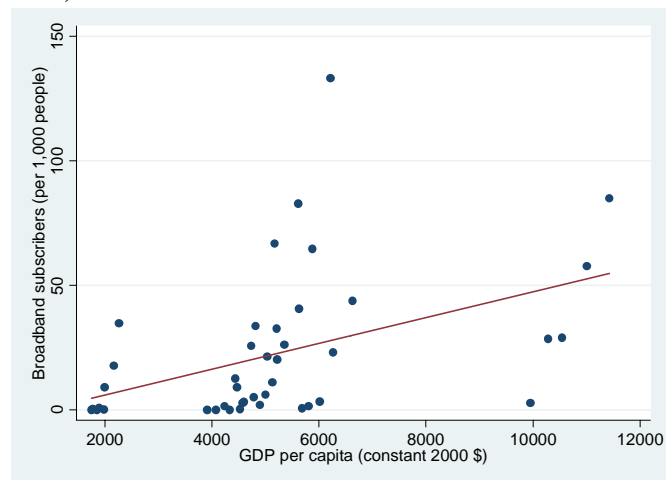
Source: [11]

Second, the legislature on market liberalization may be delayed not because laws were not passed, but

because implementation is not done correctly. For example, interconnectivity among different networks and privatized national network may be impeded by the privatized telecom. This is due to maintaining market power and share, and keeping competitors away from the market. This is not likely to last very long, due to pressures from other competitors and pressures from the EU, but it may delay price fall for several years. In the end it may delay implementation of e-government systems for some time.

From figure 8 we can monitor number of the Internet users in respective countries and their GDP per capita for the period 2001-2005. Again, the data is pooled. We can observe from the figure that the trend line is lying higher than the one for broadband. If the infrastructure problem is as described for the broadband, why would there be a significant departure? The reason may lay in the history of the development of the Internet. It was first confined to higher education institutions and research institutions. Afterwards it spread to the commercial use. So the Internet is available through universities, research facilities, public libraries and schools much sooner than the actual wide-spread commercialization through private Internet providers. However, commercialization of the Internet provider services made it a success, and was responsible for wider use of the Internet, not just on the job or in the schools or at universities, but also at home. This breaking point when the Internet entered homes is crucial for wide variety of Internet services diffusion including e-government and e-democracy.

Fig.7 Broadband subscribers and GDP per capita (2001-2005)



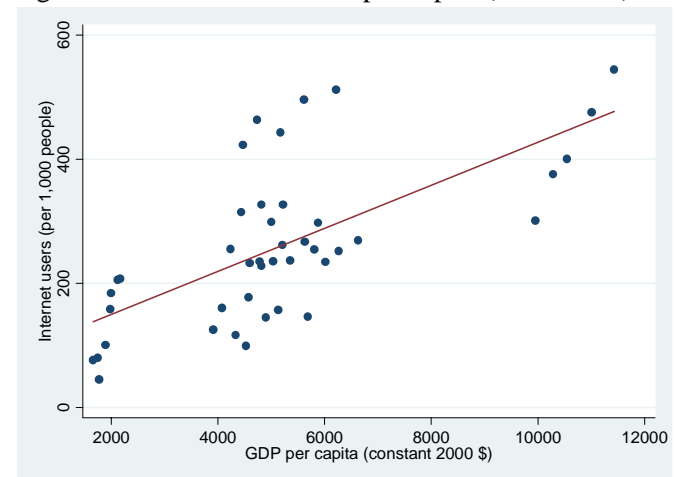
Source: [11]

From figure 9 we can observe number of personal computers and GDP per capita of respective countries. As before, the data for respective countries is pooled. Even though we can clearly see where the data is clustered, there are quite a few outliers. The outliers here

are different points which reflect similar levels of personal computers but much different GDP per capita levels. How are these significant differences possible? Again, historically, Japan was a large producer of computer components; however it was at lower levels regarding the use of personal computers compared to other developed countries. It may be so that competitiveness of sampled countries is not ICT intensive, but are dominated by other industries. While Hungary has a relatively higher proportion of high technology exports than other countries in the sample, it is not the country with the highest GDP per capita.

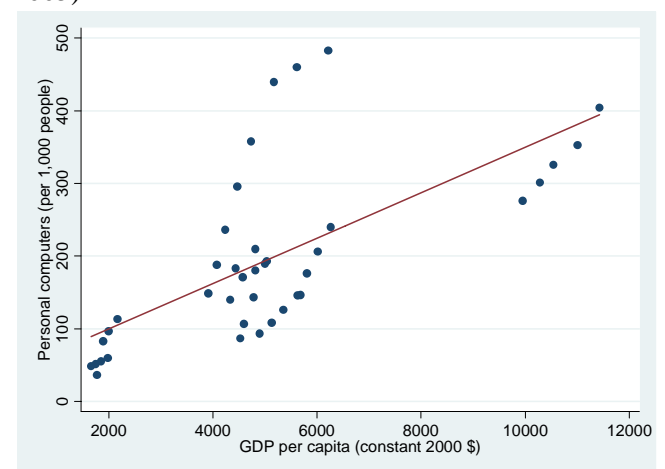
It is expected, regardless of all the problems, in the future period, as technology progresses and GDP rises, broadband Internet and PCs to become as common as a TV set.

Fig.8 Internet users and GDP per capita (2001-2005)



Source: [11]

Fig.9 Personal computers and GDP per capita (2001-2005)

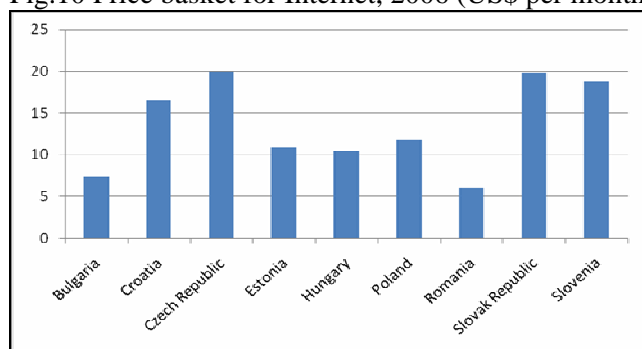


Source: [11]

From figure 10 we can observe how expensive the use of Internet is. Price basket for Internet is calculated

based on the cheapest available tariff for accessing the Internet 20 hours a month (10 hours peak and 10 hours off-peak). The basket does not include the telephone line rental but does include telephone usage charges if applicable. Data are compiled in the national currency and converted to U.S. dollars using the annual average exchange rate. We can observe here Czech Republic and Slovakia to be front runners, and Romania and Bulgaria to be laggards. At the same time, Romania and Bulgaria do not exhibit a significant increase of ICT infrastructure. If we looked only at nominal figures we would have quite an absurd conclusion. However, even with very low price basket for the Internet, the actual price given their GDP level is still high. The other problem may lay in conversion using US dollars as a denominator. We can conclude here that as GDP increases, the price of the Internet basket does go up, but the use of the Internet is more common since available income in economies allows spending more on ICT. Furthermore, the price basket for the Internet given GDP does decrease in relative terms. The real outlier here is Croatia, since its GDP is lower than that of Slovenia, Czech Republic or Slovakia. This situation can only be explained with lagging implementation of liberalization of the ICT market.

Fig.10 Price basket for Internet, 2006 (US\$ per month)



Source: [22]

## 4 Performance of e-government

Web portals can be considered as a primary vehicle for facilitating e-government initiatives. Vast majority of person-to-person interactions among individuals and public administration can be eliminated or, better yet, reallocated to on-line services, thus eliminating unnecessary queuing, hence increasing public administration efficiency. Processing forms, registrations, issuing various permits are just few of the benefits for the citizens. E-health has the same goals within the health care system. It needs to be said that main beneficiaries of these actions are not just citizens but businesses as well. This could greatly influence

Croatia's competitive position among transition economies competing for foreign investments. Company registration and filing tax returns on-line are just two processes found to be much more convenient to perform in the web environment. However, it should be noted that these activities boost competitiveness, but are not the only thing a government should do in order to make a country more competitive. E-activities are an important part of increasing administrative efficiency, but they are by no means the only or the most important one.

Numerous researches were conducted while trying to assess the degree of interactivity available within a particular site. Most common web sites analyzed were of state and local governments and parliaments. Pina [6] analyzed government and parliament web sites in 19 OECD countries according to three main variables: financial accountability, political dimension and citizen dialogue. He concluded that ICTs do not promote financial accountability further away from legal requirements. Nevertheless, having all the financial data in one place greatly helps citizens and businesses in searching for relevant information.

Regarding the web accessibility in Croatia, an annual research was conducted in September 2006 [7]. The methodology is consistent to similar researches carried out in the EU member states. This fact enables comparison of the results as well as monitoring year to year progress of e-government implementation in Croatia. Result of the research is an index in percentage terms measuring accessibility of public services on the Internet. Altogether 20 areas of e-management (public management) were measured, 12 pertaining to services for citizens and 8 to services for businesses. A score of 0 to 4 was applicable for every service. The score 0 indicating that service is not available on-line or no web page exists and 4 indicating that service is completely available on-line. If a service is available fully on-line than the percentage for that service is 100%.

Services were divided into 4 different clusters: Income-Generating cluster, Registration cluster, Returns cluster, and Permit cluster.

Overall results showed online services for businesses to top the online services to citizens by 46 to 60%. In comparison to the EU, in 2006 Croatia had lower scores in all clusters.

The income cluster scored 65% (EU 94%), but this is a significant progress from 47% on year before and only 3% in 2004.

Registration cluster scored 40% (EU 72%), but again this cluster showed significant progress from a year earlier (35%), and especially from 2004 when the score was only 1%.

Similar pattern is found for other two clusters as well. Permit cluster (37%, EU 61%) showed significant progress from 1% in 2004. Returns cluster scored 61%



and 71% in the EU. Again this showed great progress from 11% in 2004.

Research shows that overall trend is favorable for Croatia; however, more work needs to be done in order to be near the EU averages as Croatia enters the EU.

Research for the Central and Eastern European countries showed mixed results regarding e-government development.

Report for Bulgaria indicates that e-government is hardly developed and only interaction within the domain of e-Government is between enterprises paying social contributions for their employees.

Although not fully developed, e-government in Czech Republic showed promising development indications with growing number of users and wider pallet of services available on-line.

Estonia had high percentage of business users interacting with the government, mostly for tax purposes. Furthermore, according to e-government readiness report holds first place within the countries analyzed here.

Hungarian population is mostly using e-government possibilities for tax submitting purposes and the usage is continuously increasing.

Other countries show more or less similar results without substantial deviations.

It is clear from the analysis above that e-government possibilities have not been realized to a greater extent. Even though services may be available on line, people like to get a hard copy receipt of submitted papers, even though electronic transactions are available and legally permissible. It will take some time before everyone is persuaded that paper is not the "holy grail" and to accept the fact that electronic transactions are substitute for paper transactions (with physical signature and stamp). This may be due to a fact that many procedures still need paperwork, stamps and signature, so people feel more comfortable with paperwork than with "e-work".

## 5 E-Government Implementation in Croatia

By the end of 2003 Croatia began to take steps in forming foundations for development of e-government solutions. At the time Croatia was no different than any other transition country in Europe. It was characterized by low level of administrative transparency, lack of maturity for standardization and measurement, low income and the low Internet penetration rate.

However, awareness in Croatia is increasing with introduction of e-government solutions in different areas of public services. First attempts in that direction were done in April 2000 when Croatian Government ordered the study on National Strategy. In June 2000 work group was formed. After official procedures in January 2002

National Strategy of Development of ICT was adopted by the Croatian Government and the Parliament. After establishment of infrastructure for development of e-government solutions, actual implementation began. In December 2003 the Central Government Office for e-Croatia was established at a cabinet level responsible for implementation of the project e-Croatia 2007. Head of the Office was directly responsible to the Prime Minister [12].

In December 2003 the Government accepted the operational plan for implementation of e-Croatia 2007 program, proposed by the Central Government Office for e-Croatia. According to the plan, Croatia should emphasize modern online public services in the area of e-government, e-learning services, e-health services, e-business environment, widespread availability of broadband access at competitive rates and a secure information infrastructure.

The European Commission defined a set of services consisting of twelve basic sets of services for citizens and eight basic sets of services for businesses. They set the foundation for the development of services by e-Administration and the project HITRO.HR within the implementation of the e-Croatia initiative.

HITRO.HR was established to serve as a gateway for individuals and businesses in need of public administration services. Croatia has historically scored rather low regarding the number of days that it takes to open a firm in comparison to neighboring countries. In order to upgrade its position HITRO.HR was established as a one stop shop. The web site basically clusters together various steps in the procedure of opening a firm and combines various services that enable e-communication among the stakeholders and the government. Among others, web site includes: e-KUTAK (information on benefits of conducting business on-line), e-PENSION, e-PAYMENT and many others.

Certain progress was made in the area of most important public services for citizens, e.g. submission of income tax returns, employment office services, social benefits, issuing identification documents, vehicle registration, issuing construction permits, police contact, birth certificates, admissions to higher education facilities, change of address and health services information. Furthermore, some progress was made in the area of business services, primarily submission of business tax returns; value added tax, social insurance of employees, registration with the business subjects registry, submission of data to the Bureau of Statistics, customs declarations, public procurement, and environment impact licenses.

Another important issue for development of e-governments solutions in Croatia is security. High security is vital precondition for e-government development. General public needs to have complete

trust in the system in order to use it, and the public sector needs a high level of security to handle electronic contacts with citizens. In that sense, a digital signature for citizens, companies, and public institutions is a major component of an e-government strategy.

In January 2002 Croatian Parliament adopted the Digital Signature Act and implementation started in June 2002. National certification center was created at the Ministry of Commerce and an agency for e-signatures was certified. In this way Croatian infrastructure was harmonized with the EU Directive 1999/93/EC [12].

Ambitious goals were set in 2002 by creating the Program for Health Care computerization, which was by design divided into a project for primary health care computerization, and a project for hospital systems computerization. However, as the Government changed, many projects were put on hold due to the lack of funds, or waiting for evaluation.

In order to properly organize network infrastructure the process had to be run from the Government level. Thus, governmental communication network infrastructure was designed. Development of this network is a vital precondition for public on-line services in Croatia.

Regarding the internal structure of the Central Government Administrative Office for e-Croatia, the following departments were established: the Department of Rationalization of Investments in Information and Communication technologies, the Department of e-Croatia initiative Implementation Coordination, and the Department of International Cooperation

One of the recent initiatives was the digital register of voters. The register is available to citizens via the web service of the Central Government Administrative Office for Public Administration (SDDU). The Government Election Committee provides access to data on local and national elections (e-democracy in making).

## 6 Conclusion

This paper clearly shows implementation of e-government to be necessary in order to boost accountability, transparency and efficiency of public administration. In order to achieve these goals, both soft (computer literacy) and hard (physical) infrastructure must be in place.

Croatia has done well in past years in order to establish a viable e-government. Indicators are improving rapidly, but they still lag behind frontrunner neighboring countries. Furthermore, full implementation with feedback from the government will take some time before fully functional. Both citizens and the government are not yet ready for full implementation of e-government in Croatia. The current situation resembles

the notion of i-government more than a fully functional e-government.

With prospects of near accession to the EU, Croatia certainly needs to step up its efforts for implementation of e-government in order to reach the EU averages by the time of entry into the EU, and for its own progress in public administration's accountability, transparency and efficiency, thus becoming more competitive in the global market.

Even though there are issues regarding the ICT infrastructure and literacy, the major issues with implementing e-government are the people. Breaking barriers in minds will take much more than breaking physical technological barriers.

Public administrations all over the world try very hard to avoid any kind of change. This impediment to implementation of any new technology will remain constant in time. Thus, it will take more effort and energy to break customs of administrative procedures than to make software or hardware.

The problem lies with insecurities associated with implementation of new technologies. If there is a computer, how many people will lose their job? If there is a new technology, does it mean I will have to study something new and unfamiliar? The loss of jobs is not so common in public administration due to technological change, but learning certainly is. These fears should be addressed accordingly and timely. Maybe then administrative opposition would yield more useful public administration.

In the end usefulness of e-government will be established, but with a price for the tax payers to bear.

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