

Assessing e-Readiness in SEE countries: Perceptions towards e-Government Public Services

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Abstract.

e-Government services are emerging rapidly in the developing world. Many countries use e-Government as an enabling tool to increase efficiency, enhance transparency, collect more revenue and facilitate public sector reform. Five factors are critical for the successful implementation of such services, which include political commitment to the reform process, availability of information communications technology (ICT) infrastructure, institutional capacity, underlying legal framework related to electronic administration and last but not least, e-Government strategic planning. This paper investigates the level of electronic readiness in five South-Eastern European (SEE) countries towards planning and managing e-Government public services in the region. Furthermore, it delivers a country-specific review of e-Government strategy and regulatory framework and presents assessment results on the implementation progress and the level of sophistication that e-Government services have reached in the five SEE countries under investigation.

1. Introduction

Information and Communication Technologies (ICTs) is probably the most frequently used term of our times, developed to include a variety of communications technologies and devices, as well as the entirety of services and applications associated with them.

Nowadays, it is increasingly acknowledged that the information delivered through the use of ICT has become a core aspect of international socio-economic development. The role of ICT in this global development lies less in the technology itself, than in its ability to create greater access to information and communication in underserved populations. In this way, fundamental changes and reforms can be achieved on how business is conducted and public services are provided.

Most countries around the world [1] have established competent institutional capacities for the promotion of ICTs, the establishment of national ICT strategies and the bridging of the digital divide. In order to enhance the range and quality of information and services provided to citizens, businesses, civil society organisations and other governmental agencies, e-Government has been identified as a crucial tool in developing countries. Governments

tend to embrace e-Government more and more in their structure in order to enhance interaction with the citizens, increase productivity in the delivery of government services and improve transparency, accountability and democratic participation.

Achieving the above involves planning efforts to identify needs and capabilities [2]. e-Government planning should be responsive to the current status of the country in terms of its ability to adopt and integrate technology-based projects. This assessment based on both quantitative and qualitative measures of the ICT infrastructure and its accessibility to the population can be performed by applying an e-Readiness assessment methodology.

Since 2002, South East European (SEE) countries have embarked on an effort towards the implementation of e-Government public services and their integration with the overall public administration reforms. This paper presents an e-Readiness assessment on five SEE countries (Albania, Bosnia & Herzegovina, Montenegro, Serbia and the Former Yugoslav Republic of Macedonia) using standard international methodologies to estimate a networked readiness, to obtain comprehensive data and derive appropriate conclusions for taking effective decisions related to fostering the development processes of informatisation in the SEE region. Additionally, in the framework of e-Government, the paper reviews the current status in these SEE countries, highlights policy and strategy issues, measures progress against key commitments and assesses the development of key e-Government services.

As follows, this paper is structured in two major sections, where Section 2 presents the results of the e-Readiness assessment of these 5 countries and Section 3 discusses specific issues regarding their e-Government development.

2. e-Readiness Assessment in SEE Countries

e-Government readiness is a function of a country's state of networked readiness, its technological and telecommunication infrastructure, the level of citizen's access to electronic services and the existence of governmental policy and security mechanisms. The following paragraphs of this section present a set of e-Readiness indicators that provide a basic understanding of

the conditions in each country, which are directly related to the development of e-Government.

2.1. Access to ICT

Access of individuals and organisations to modern information and communications infrastructure is a major precondition for a country's readiness to enter the global information society and develop e-Government services. In accordance with the approach selected in this paper, access to networks is defined as the availability and access to a telecommunications structure (primarily, the internet). Networks quality and capacity, as well as the usability and level of development of the telecommunications services, are also considered as an important parameter of ICT accessibility.

Table 1 – Fixed-line infrastructure statistics

	AL	BiH	FYROM	MNE	SERB
Population	3,166,000	3,856,000	2,045,000	638,000	7,398,000
Main Telephone Lines	295,000	993,500	447,894	190,000	2,898,000
Fixed Subscribers	295,000	989,000	490,361	180,000	2,854,600
Main Lines Penetration	9.3%	25.76%	21.90%	29.8%	38.65%
Main Lines Growth	2%	-0.45%	-5.7%	-2.3%	3.8%
Network Digitalization	98.4%	99%	100%	100%	93.31
Residential Lines	91%	N/A	90.41%	87.39%	88.38%
Business Lines	9%	N/A	9.14%	12.61%	11.42%

**Indicators based on 2007, provided by INA SEE ICT Monitoring Review[3]*

Table 1 illustrates the total number of fixed lines (4.82 million) that is currently in use in Albania (295K), Bosnia & Herzegovina (993K), FYROM (447K), Montenegro (190K) and Serbia (2.89mln). When balancing these figures with the population there are considerable differences in the level of penetration of the fixed network with Albania at the lowest level and Serbia at the highest (38.65%) compared with the EU-27 (Member States) average that lies at approximately (40%) [4]. The negative growth of fixed lines in most countries is attributed to the switching of subscribers from fixed-line networks to GSM and wireless services. All target countries have been making significant progress in the digitalisation of their fixed networks and most of them are close to complete conversion (100% in FYROM and Montenegro).

With regards to fixed internet access, dial-up is still predominant in all five countries. Serbia has a higher number of broadband connections, but a significant number of dial-up users remain. In Albania almost all internet users are using dial-up, mainly due to lack of broadband infrastructure. Broadband penetration rate in the countries' population, measured on the overall number of broadband connections, is significantly below the EU-27 average rate that in January 2008 was around 20%.

The average broadband penetration rate for the five investigated countries is 2.24%, with the highest level observed in Serbia (4.37%). The number of ISPs active on the market may appear impressive in most of the countries. However, the majority of the market is controlled by the incumbent operators and undoubtedly with higher revenue, suggesting that they hold the upper-class spending customers.

Particularly, in Albania, the incumbent has set an investment plan for major infrastructure and network improvements in the country. The incumbent's objective is to embed the latest technology applied in developed countries in the existing network but also to increase network capacities. Currently, dial-up service remains a significant and even a predominant form of access. The incumbent is offering broadband download speed at 256 kbps; 512 kbps and 2 Mbps but the prices are the highest in the SEE region. Prices range from 30 Euros (256 kbps) to 300 Euros (2Mbps Microwave Secured Internet Service –MSIS), which remain particularly high for the majority of the population.

In BiH the internet services usage is constantly growing, particularly in terms of broadband. Speed of internet access using ADSL service in BiH ranges from 384 kbps to 4 Mbps. Packages usually provide limited data transfer, but also flat rate packages (no data limit) are available. As an example an ADSL internet package with access speed of 384 kbps and 1GB of allowed traffic costs about 10 Euros per month. With regard to cable internet access in BiH, a speed of connection ranges from 128 kbps to 4 Mbps. The lowest monthly subscription for cable internet package of 256 kbps connection speed and 1GB traffic is 8 Euros.

Table 2 – Internet access statistics

	AL	BiH	FYROM	MNE	SERB
Population	3,166,000	3,856,000	2,045,000	638,000	7,398,000
Internet Subscribers	27,780	273,752	201,898	108,403	1,268,500
Internet Users	471,250	1,055,000	773,010	195,000	1,400,000
Internet User Penetration	14.90%	27.36%	37.80%	30.60%	18.67%
Internet User's Growth	292.5%	18.01%	18.6%	37.7%	38.31%
Dial-up	25,000	189,059	153,535	93,786	685,397
xDSL	2,100	37,635	48,214	14,428	199,664
Wireless	-	16,448	N/A	-	36,059
Cable	-	29,412	149	-	87,731
Broadband Penetration	0.066%	2.16%	2.36%	2.26%	4.37%
Internet Hosts	852	39,627	6,001	617,185	23,892
Number of Domain Names	830	8,958	12,731	140,000	40,824
Number of ISPs	25	52	32	7	159

**Indicators based on 2007, provided by INA SEE ICT Monitoring Review[3]*

In the former Yugoslav Republic of Macedonia the telecom market is rather small but rapidly developing. Internet and broadband penetration is growing continuously, which is the result of a number of factors that make this growth possible, including market economy and demand, the development of infrastructure and networking, and local content offerings. Broadband services in FYR Macedonia are available via DSL, cable and recently via WiFi and WiMAX. In the framework of an USAID-led initiative, wireless internet has been brought to 460 primary and secondary schools. Recent wireless infrastructure developments made the country become the first (of such size) in the world with complete wireless broadband coverage of up to 95% of its population.

The number of internet users in Montenegro has been growing rapidly as well. Montenegrin internet penetration (30.6%) indicates that the country is over the average among the countries targeted, but is still lagging behind the EU-27 Member States' average (60%) [4]. The increase of penetration by 7.6% in 2007 was encouraging and it is expected that such a trend is likely to continue. ISPs introduced new packages, increased the bit rates and increased the allowed monthly traffic.

Internet access in Serbia is mostly contacted using dial-up. However, the greatest increase (2007) in the number of subscribers was seen with ADSL, which was more than five times higher compared than in 2006. Also, a constant growth rate in the number of cable modem internet customers has been observed over the past three years. This sharp rise in the number of broadband users is a result of the introduction of 3G technologies in mobile networks in Serbia, enabling the end-user to access the Internet via cellular phones and data cards. The speed of internet access in Serbia flows between 256 kbps and 2 Mbps for residential users and over 2 Mbps for business users.

The positive growth trend in terms of the number of users, access speeds, the decreasing cost of broadband connectivity and the improved Quality of Service (QoS) that new technologies offer, is of strategic importance for the development of e-Government. Broadband is indeed a key facilitator and accelerator of internet growth and it plays a major role in influencing internet penetration and accordingly the use of electronic services around the world and consequently in SE Europe.

2.2. Secure electronic Services

The development of e-Government services makes it particularly important to strengthen awareness on security issues and take strong, preventive measures in technology and management respects. It is essential to provide a secure and trusted environment, in which e-Government users will be able to use online services. Moreover, protecting confidentiality and the parties' privacy in electronic communications and transactions, and

preventing repudiation of transactions is critical and necessary.

According to the European Union directive 1999/93/EC, each Member State is obliged to operate a National Root Certification Authority (NRCA). NRCA is responsible for issuing digital signatures. Digital signature is a technology that enables safe and legally binding transactions based on networked communication and the exchange of electronic documents. Such signatures are considered equivalent to regular hand-written signatures (in most of the cases) and they are essential in reducing paperwork and providing e-Government services quicker and more secure. As illustrated in Table 3, none of the countries have yet established a NRCA, but some progress has been made towards their implementation, as in Albania, BiH and Serbia.

Table 3 – Secure electronic services implementation progress [5]

Indicator	AL	BiH	FYROM	MNE	SERB
Electronic identity management and Interoperability Framework					
Existence of operational National Root Certification Authorities	■	■	□	□	■
Existence of single-window for international trade and electronic trade documents	□	■	✓	□	■
Existence of interoperability framework	✓	✓	✓	N/A	□
Security Services					
Existence of national internet exchange centres	□	□	□	□	□
Existence of national computer emergency response centres	□	□	□	□	□
Services to provide support to internet incidents	Legislation Adopted	ISP support only	Legislation Adopted	□	✓
Existence of body responsible for network and security policy	□	□	□	□	□
Existence of an alert website or information security portal	□	□	□	□	□
Done ✓ In Process ■ No activity taken □					

In the countries' process of informatisation the creation of a 'single-window for international trade' and the use of electronic trade documents are recognised as key elements. According to the data presented in Table 3, FYR of Macedonia has implemented an electronic trade document system, while BiH and Serbia are currently in the implementation phase.

The development of e-Government services entails increased internet traffic, which raises the importance of the existence of national exchange centres and also the

necessity of planning and preparing for augmented traffic exchange in the long-term. Unfortunately, no actions have yet been taken to this respect in any of the investigated countries.

It is widely recognised that e-Government services have to provide a security framework that complies with the complexity and vulnerability of the involved communication networks & information. Public Security-awareness and support services are vital to ensure that the users (both citizens and civil servants) are informed of the potential security risks and they can get support or report security attacks and vulnerabilities. In many developed countries, a National Computer Emergency Response Centre exists to tackle issues related to electronic threats. The centre serves as a trusted focal point of contact for ICT security incidents. Its activities involve and target critical national infrastructures and key industries in the public, private and government sectors. Its mandate includes creating adequate levels of cyber security awareness and providing accurate and timely information on current and emerging security threats and vulnerabilities. As Table 3 presents, none of the countries have developed such national centres yet. However, legislation related to internet incidents has been adopted in Albania and the fYR of Macedonia, while in BiH Internet Service Providers (ISP) provide support to minimise security risks and their impacts, as well as to respond to the security incidents.

3. e-Government Development in SEE Countries

Today's governments face an important challenge, not only in terms of providing better services to citizens through the internet, but also in terms of increasing productivity, reducing cost and comply at the same time with all legal aspects related to the offered services. This section presents an overview of the e-Government strategy adopted by SEE countries and illustrates the legal framework for electronic administrative communication. Additionally, an assessment of 23 basic public services will outline the progress on e-Government development in the region.

3.1. e-Government Strategy

A key issue faced by government officials is how to approach e-Government. Reform of the public sector is typically painful, slow and meets much resistance. In a number of cases e-Government applications have been the catalyst for change and have enabled public sector reforms to move quickly. Sequencing of different reform initiatives can be a question of tactic, but for e-Government to be effective, it must be implemented in a wider context of basic reforms.

An e-Government strategy encompasses answers to many questions in the specific context of a country. The strategy should define the nature of projects that are taken

up, the organisational and institutional arrangements that can best harness resources and deliver the intended benefits. A policy framework would need to be defined for creating a supportive environment.

In the beginning of 2009, Albania drafted the National Strategy for the Development of Information Society. The vision of this strategy is the development of a knowledge based society, where all citizens benefit from ICT technologies, and the level of knowledge, effectiveness and transparency in public administration is increased. e-Government strategic goals include the offering of interactive public electronic services, the creation of a safe environment for the exchange of classified government information, the conduction all the public procurement, tax, customs and health services electronically by the end of 2013 and finally the improvement of the legislation for the information society. Albania's related Action Plan is in the planning phase.

In November 2005, the BiH Council of Ministers adopted the Policy, Strategy and Action Plan of the Information Society 2004-2010 that is composed of five development pillars: the Legal Infrastructure, e-Education, e-Governance, ICT Infrastructure and ICT Industry. The strategy highlights the need to re-engineer the public administration, develop e-Governance infrastructure that complies with interoperability standards, implement Central Registers to share public data and finally facilitate society revitalisation by introducing e-Services and e-Democracy. In 2006, the Council of Ministers adopted the Strategy and Action Plan for the Public Administration Reform. One of its main targets is to increase IT utilization in public administration to: make government more accountable, transparent and effective; improve information and service delivery; and encourage citizen participation in the decision-making process. The important anticipated changes relate to: policy; organization and human resources; IT infrastructure, including security; and automation of public administration business processes, including fundamental registries, horizontal functions and e-services.

The main policy targets for Information Technology and e-Government development in the fYR of Macedonia are given by the references of the Government Programme (2006-2010) on IT and the e-Society. The programme recognises the importance of improving the quality of IT education and continuously invest in computer science and IT. The targets set out in the Government Programme (2006-2010) are further developed in the National Strategy for Information and Communication Technologies, as well as the relevant Action Plan. This is a set of strategy papers drafted by the Information Society Task Force, an ad-hoc expert body consisting over 40 ICT and Information Society experts led by the state's Commission for Information Technology. The strategy comprises seven pillars: Infrastructure; e-Business; e-Government; e-Education; e-Health; e-Citizens; and Legislation. Furthermore, special

focus is placed on the sustainability of the strategy. A key challenge in the strategy building process is defining the economic, social and political vision of the knowledge-based society through ICT development and its application to all spheres of life. The strategy document defines 41 projects as implementation targets to be attained by 2010 in a graded order of diminishing priority.

Montenegro adopted in 2008 the National Information Society Strategy, which states that the developments related to e-Government and the information society will be continued. Montenegro is obligated to undertake specific actions towards e-Government and the society of knowledge and digitalization. According to the strategy, the actions will include the further development of telecommunications infrastructure, the growth in rate of internet penetration and the decline in digital gap. Montenegro is planning to strengthen ICT staff capabilities, enhance efficiency and transparency of the performance of the public administration and introduce the National Program of Information Society Safety as well as the Law on Information Safety, in order to protect information systems of public administration bodies.

The main policy targets for Information Technology development and e-Government in Serbia are given by the National Sustainable Development Strategy of 2008. The strategy recognises that the government and the relevant ministries should initiate the building of the necessary national infrastructure to support the dissemination and strengthen the role of ICT in the future development of Serbia. This refers primarily to building a broadband network as a necessary pre-requisite for strengthening the role of ICT in everyday life and work. In order to efficiently promote the role of ICT it is necessary to adopt and complete the institutional infrastructure in this field, fully compliant with EU regulations.

The targets stated in the above countries strategies are critical to the roll out of e-Government applications and services in SEE region. As noted, institutional, legislative and fiscal frameworks should be in place for successfully implementation of an e-Government framework.

3.2. The Legal Framework for e-Government

Recent e-Government developments have put pressure on the legislature to provide an adequate legal framework for electronic administrative communication. Thus, various countries have started to draft provisions in their administrative Law in order to remove legal impediments that hamper the provision of electronic services from public administrations. This section provides an overview of the legislative framework and developments in the target region.

Currently, the overall e-Government legislation in Albania is not yet completed, as indicated in Table 4. e-Signature Law was adopted by the government on 25 February 2008 aiming to create the necessary legal framework on the recognition and application of electronic signatures. In the area of e-Commerce, there is currently no specific legislation in place. However, a

working group has been established to draft the e-Commerce Law and finalise it within 2009. Cybercrime Law was signed and ratified in 2002 with additional amendments in National Laws adopted in November 2008. The new Law on electronic communications entered in force in June 2008, setting the principal legal instrument for the regulations of the electronic communications sector and defining the institutional framework, including the responsibilities of the government, the relevant ministry and the national regulatory authority. In March 2008, the Ministry of Justice revised the Law on Protection of Personal Data. The new adopted law is intended to bring national legislation into line with EU legislation and the standards of the Council of Europe.

Table 4 – Legal framework progress [5]

Indicator	AL	BiH	FYROM	MON	SERB
Legal framework on e-Signature	✓	✓	✓	✓	✓
Legal framework on e-Commerce	■	■	✓	✓	■
Law on electronic documents	■	□	✓	✓	□
Law on cybercrime	✓	✓	✓	□	□
Law on telecoms.	✓	✓	✓	✓	✓
Law on personal data protection	✓	✓	✓	✓	■
Done ✓ In Process ■ No activity taken □					

In BiH, the Act on Electronic Signature was passed in September, 2000, and took effect six months after publication. The Act regulates the bases of the formation and use of e-Signature, and the provision of services related to e-Signature and e-Certification. Currently, legislation on e-Commerce does not exist. However, a draft law is in the parliament. A convention against cybercrime was signed in March 2006, while no actions have been taken towards electronic documents' regulation. The law on communications has been adopted by BiH Parliamentary Assembly in November 2002. The law regulates communications in BiH, and the establishment and work of the Communications Regulatory Agency in accordance with the Constitution of BiH, which provides for the establishment and operation of common and international communications facilities. In May 2005, the law on the protection of personal data was adopted. The purpose of this Law is to secure in the territory of BiH for every individual, regardless of their nationality or residence, respect for human rights and fundamental freedoms, and in particular the right to privacy with regard to the processing of personal data. This Law is also intended to establish the Agency for Protection of Personal Data in BiH, define its responsibility, organization and governance, as well as

other matters of relevance for its operation and lawful functioning.

In the FYR of Macedonia the legal framework on e-Signature was adopted on the 25 April 2005, while legal acts related to it are still pending. The Law on Electronic Commerce was adopted by the Parliament on 26 October 2007. It regulates the Information Society services related to electronic commerce, the responsibilities of the providers of these services, as well as commercial communication, and provides the rules pertaining to the conclusion of contracts in electronic format. Electronic documents regulation is currently covered by the Law on Data in Electronic Form and Electronic Signature (2001), which involves the use of ICT, as well as that of electronic data and signatures in judicial, administrative and commercial transactional procedures. Computer crime is partially regulated by the Crime code enacted in 2007. The Electronic Communications Law voted by the Parliament on 15 February 2005, allows increased competition in the telecommunications industry, prevents monopoly tactics and provides the regulatory instruments and procedures concerning security and protection of privacy of data. Harmonisation of legislation in the area of personal data protection has become a government priority activity since 2002. A new Law on Personal Data Protection, amended to include EC recommendations, was drafted in 2004 and eventually adopted on 25 January 2005. In line with the country's policy, a Directorate for Personal Data Protection was established as an independent state body on 22 June 2005.

Currently, the overall e-Government legislation in Montenegro is not yet complete. The Montenegrin law on e-Signatures was adopted on 24 September 2003. The law promotes secure and efficient utilisation of electronic communication by specifying requirements for certain electronic signatures and certification authorities that issue certificates for electronic signatures. The Laws on e-Commerce and electronic documents were passed on 24 December 2004 and 26 December 2007, respectively. Cybercrime in Montenegro is partially regulated by the Penal Code endorsed in 2003 under "Criminal acts against the computer data security" chapter. The new Law on Electronic Communications that was adopted on 29 July 2008 entered into force on 27 August 2008 and is the new principal legal instrument for the regulations of the electronic communications sector. It defines the institutional framework, including the responsibilities of the government, the relevant ministry and the national regulatory authority. On 17 December 2008, Montenegro adopted the Law on Personal Data Protection which regulates personal data protection in accordance with the principles and standards contained in ratified international agreements and generally accepted rules of international law.

In the context of e-Signature regulation in Serbia, two laws have been adopted, the Law on Electronic Signature (December 2004) and sub-law acts for fulfilment of the Law on Digital Signature. By-laws have been updated in November 2007. The Law on e-Commerce is drafted by

the Ministry of Trade and Services and is currently under the parliament procedure. The laws on electronic documents and cybercrime in Serbia are still not existent. A draft version of the Law on data protection has been adopted in January 2008 by government and is now in process of adoption by the National Assembly.

3.3 e-Government Services

This section presents a review of e-Government services development based on a common list of 23 basic public services (Table 6) and on the enhanced methodology used to assess their level of online availability and sophistication according to [6].

Table 5 – Levels of Sophistication [6]

Stage No	Description
1	Information. The necessary information is available on a publicly accessible website managed by the service provider.
2	One way interaction. The service provider offers the possibility to obtain paper downloadable forms. The electronic submission of the forms is not possible at this stage.
3	Two-way interaction. The service provider offers the possibility of an electronic intake with an official electronic form.
4	Transaction. The service provider offers the possibility to completely treat the public service via the website.
5	Personalisation. The complete public service including notifications, assessments and deliveries can be treated via the website. No other formal procedure is necessary for the applicant via "paperwork".

This comparative analysis is based upon a method that has been modernised, to take into account new technological possibilities and insights. Additionally, it recognises the significant advancement that has been made by countries over the years. For each service, the sophistication stage reached is indicated, with reference to the maximum stage possible for the service as presented in Table 5.

Results indicate that most of the basic public services in the SEE region are under development (Table 6). Among the five target countries, BiH is in the earlier development stage, having 12 services with no activity and 11 under development. Albania, FYR Macedonia and Serbia have already completed some of the services, while Montenegro is basically in the planning phase. As observed from the comparative results, the sophistication stage reached in most of the services is still low, even if the development has been completed. This is expected to cut-off significant foreseen benefits that e-Government services have to offer.

Table 6 - Progress Status of 23 basic Public Services [5]

	AL	BiH	FYROM	MNE	SERB
Tax payment	✓ 2/4	■	✓ 4/4	■ 1-2	■ 2-3/4
Environment and construction permits	□	■	▲ 1/5	▲	✓ 5/5
Electronic cadastre & related registers of ownership	■	■	■ 3/5	▲	■
Healthcare and pension	▲	■	■ 3/4	▲	■ 1/4
Enterprise registration	✓	■	■ 3/4	▲	■ 3/4
Company income registration	■	■	4/5	▲ 2	■ 2/4
VAT	✓ 2/4	■	✓ 4/4	▲ 2	■ 4/4
Customs declarations	✓	■	■ 2/4	■ 4	■ 4/4
Single-window foreign trade	▲	■	■ 4/5	□	■ 1/4
Public procurement	✓	■	✓ 4/4	▲ 2	■ 3/4
Registry of mortgages	▲	□	N/A	□	✓ 4/5
State Statistical System	□	□	▲ 1/5	■	✓ 2/5
Job search	▲	□	■ 4/5	■ 2	✓ 4/4
Social benefits	□	■	■ 2/5	□	✓ 1/4
Personal documents (IDs)	■	□	■ 2/5	▲ 1	✓ 1/5
Car registration	✓	□	▲ 2/4	□	■ 1/4
Public libraries	▲	□	■ 3/5	▲	✓ 1/5
Certificates	▲	□	▲ 2/4	■ 1	■ 4/4
Admission to higher education	□	□	■ 1/4	▲ 1	■ 1/4
Residence registration	▲	□	■ 2/4	▲ 1	■ 1/4
Treasury and Programmatic budgeting	✓	□	■ 4/5	✓ 4	✓ 5/5
Support systems for implementation of EU funds	▲	□	N/A	N/A	■ 3/5
Integrated control of borders	✓	□	■ 4/5	N/A	■ 5/5
Done ✓	In Implem. Process ■	No activity taken □	In Planning ▲		

4. Conclusions

Investment in information and communications technologies (ICT) by governments in the South East European (SEE) countries has increased dramatically in recent years. Most SEE countries are adopting ICTs primarily to modernise and increase internal effectiveness as well as to improve service delivery. They view e-Government applications as an enabling tool to increase efficiency, enhance transparency, collect more revenue and facilitate public sector reform.

Studying e-Readiness indicators and performing e-Government progress assessments within the SEE region,

could create a useful regional tool in planning more realistic e-Government projects and identifying issues of technical and human capacity that will need to be addressed. National e-Government strategies should examine the nature of projects that are taken up, interoperability issues between existing and planned e-Government systems and the organisational and institutional arrangements. Additionally, special attention should be paid in investigating the legal framework in order to ensure that there are no barriers in putting public information and services online. Beyond that, SEE countries need to ensure strong political commitment and active involvement of the entire society in e-Government and IS development.

A substantial obstacle in creating a fully computerized e-Government in SEE region, as extracted from the results presented in this paper, is the lack of appropriate internet infrastructure and the low level of internet penetration. SEE countries should allocate budgetary funds and create the ideal conditions that will boost the development of modern communication networks. In parallel, stimulation of public awareness on the availability and potential benefits of e-Government services is vital towards reinforcing democracy, improving public services, and strengthening economic and business development.

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