e-Government and e-Business in Western Balkans 2010

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Abstract. This study analyses results of the e-Government and e-Business reports for Western Balkan Countries in 2010 and also results from EBIZ4ALL project led by Austrian Agency for research promotion (FFG) within the COIN (Cooperation and Innovation) program. The results are evaluated according to well known methodologies and compared with EU average results. Results of conveyed surveys for use of e-Services by companies are provided, and their use of electronic means for exchange of invoices and orders. Conclusions also include evaluation of current situation of Western Balkan countries in development of efficient government and infrastructure for Information Society capable to be interoperable in networked world and global market.

Keywords: e-Government, e-Business, e-Invoicing, e-Ordering, benchmark.

1 Introduction

The process of globalization enforces companies not only to modernize their approach to the production process, but also to implement modern technologies, and to compete on a wider scale if they want to be successful. This implementation of modern technology implies use of information technology, not only in manufacturing of the end product, but also the way that product is to be distributed to their clients, especially the means to anticipate future client demands, how clients can order their products from the company, and how the company deals with those orders, deliver the desired products and issue invoices. To be able to compete outside of its country, company needs to comply with international standards and laws, so efforts are made to unify these rules. Today, the predominant EU government driven effort in this field is the PEPPOL (Pan-European Public eProcurement On-Line) [1], project intended to provide companies with means to compete and cooperate outside their countries. A private sector driven initiative is the Hub Alliance [16],

Governments help their domestic companies by providing infrastructure on a national level, and then by unification of this infrastructure for Europe, so every company working by these standards can equally compete on international level. These efforts result in common e-Government services, which provide IT guided interaction between

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government and companies, and e-Business, using of information technology between companies themselves.

Governments can also act as a catalyst to promote e-Business through mandatory e-procurement processes with government entities. A successful example was Denmark, which made e-invoicing mandatory for all suppliers of the government. By doing this they have drastically improved the overall adoption of e-invoicing in Denmark. [17].

In this paper we present some results provided by the ongoing eBiz4All (e-Business for all) [2]. This project also involves participants from Macedonia, Croatia and Serbia, which conducted surveys in their countries.

Section 2 gives an overview of definitions used in this article, and section 3 the current evaluation of Western Balkan Countries about e-government development index. Section 4 is dedicated to e-Readiness and in Section 5, we provide insight into benchmarking of e-Government services and particularly e-Procurement. In Section 6 we discuss the results of e-Business surveys and we give our conclusions in Section 7.

2 Definitions

In this section we provide definitions about terms used in this paper.

Def 1: (e-Government) according to [3][4][5]
E-Government should include: use of ICTs, and particularly the Internet, as a tool to achieve better government, use of information and communication technologies in all facets of the operations of a government organization, and continuous optimization of service delivery, constituency participation and governance by transforming internal and external relationships through technology, the Internet and new media. ■

Def 2: (e-Readiness) according to [6]
E-Government readiness (e-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. ■

Def3: (e-Business) according to [7]
E-Business may be defined as the application of information and communication technologies (ICT) in support of all the activities of business. Commerce constitutes the exchange of products and services between businesses, groups and individuals and can be seen as one of the essential activities of any business. Electronic commerce focuses on the use of ICT to enable the external activities and relationships of the business with individuals, groups and other businesses. ■

3 E-Government and E-Readiness on World Level

E-Readiness is the degree to which a country/state is prepared to participate in the networked world. It would demand the adoption of important applications of ICTs in offering interconnectedness between government, businesses and citizens [8]. This interconnectedness is conditioned by the penetration of Internet access for the general population, and especially companies and government bodies. As much as this indicator is important, the biggest impact on development of e-government services is achieved through national authorities (governments).

Table 1. E-Government development index and word ranking for Western Balkan countries

Country	E-Gov development index	World e-Gov ranking
Croatia	0.5858	35
Macedonia	0.5261	52
Montenegro	0.5101	60
Bosnia	0.4698	74
Serbia	0.4585	81
Albania	0.4519	85

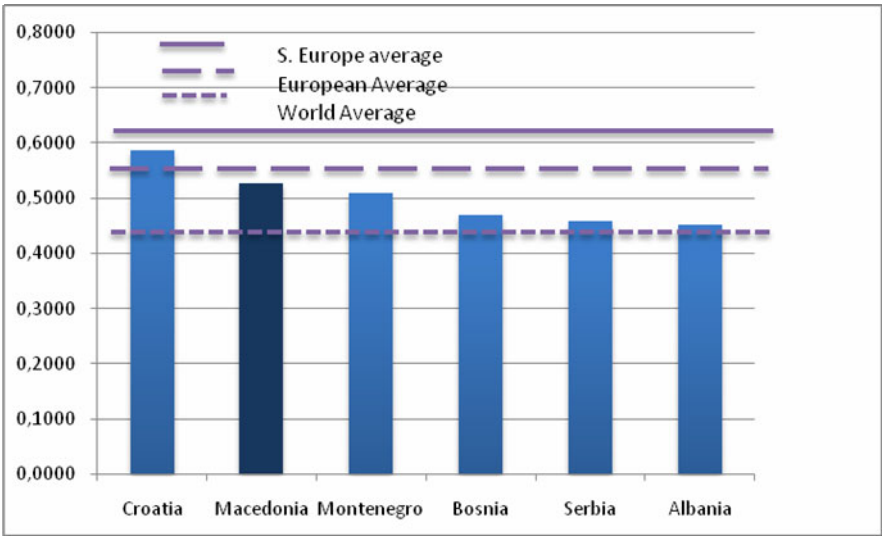

Fig. 1. E-government development index for Western Balkan countries 2010

Therefore, United Nations [9] proposed methodology for measuring e-government development index (EGDI) as a comprehensive scoring of the willingness and capacity of the national administrations to use online technology in the realization of government functions. This index is intended to present results for the national governments relative to one another, and it consists of three crucial dimensions of e-government: scope and quality of online services, telecommunication connectivity, and human capacity. Results for Western Balkan countries, Europe and World average are given in Table 1 and Figure 1.

4 E-Readiness

In the following paragraphs we used data provided by official statistical offices to present Internet usage, how companies use IT and e-Services, and how they keep and interchange data. Most of data that statistical offices collected data is by filling in a questionnaire, distributed to the companies.

ICT (Information and Communication Technology) usage in enterprises is shown on Table 2 and Figure 2, regardless of their size. We can see that these figures are fairly similar with difference not bigger than ±5% from the average. [14] and [15] give overview of EU 27 results.

Table 2. Information and communication technologies in the enterprises

Country	Macedonia	Croatia	Serbia	EU 27
Internet	86.30%	95.00%	94.50%	97.00%
LAN	71.80%	68.00%	68.90%	75.00%
Wireless	31.90%	34.00%	37.40%	27.00%
Intranet	33.40%	29.00%	43.70%	31.00%
Extranet	20.60%	13.00%	12.20%	17.00%

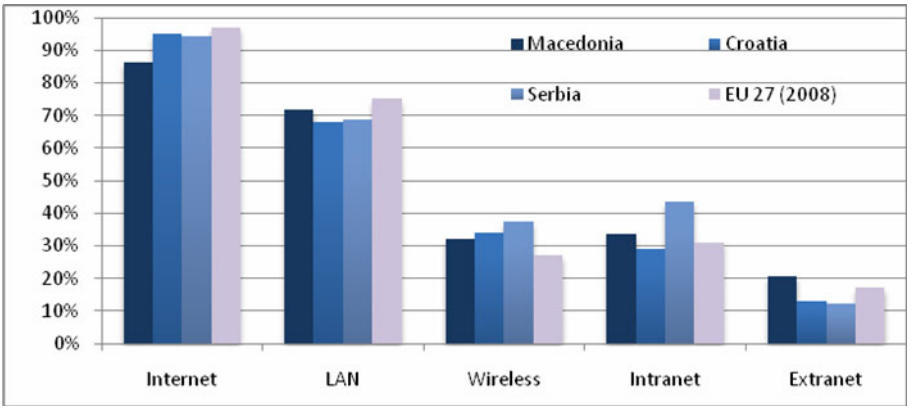

Fig. 2. Information and communication technologies in the enterprises

86.3% of companies in Macedonia, and 95% of companies in Serbia and Croatia have Internet access. The percentage of companies with wired LAN is 71.8% for Macedonia, 68% in Croatia and 68.9% in Serbia. Wireless LAN is present in 31.9% of Macedonian, 34% of Croatian, and 37.4% of Serbian companies. 33.4% of Macedonian, 29% of Croatian, and 43.7% of Serbian companies have Intranet, compared to 20.6% of Macedonian, 13% of Croatian and 12.2% of Serbian companies with Extranet.

Statistical data for Internet usage (Table 3 and Figure 3) shows that companies use Internet mostly for banking and finance (70.8% in Macedonia, 84% in Croatia and 78.1% in Serbia) and e-Government services (75.8% in Macedonia, 61% in Croatia and 69.1% in Serbia). For training and education purposes, Internet is used in 38.2% of Macedonian, 29% of Croatian, and 22.2% of Serbian companies. For e-Purchases and e-Sales, we can see that Macedonia has lowest results, where only 8.2% of

companies use Internet for purchases, and 5% for sales. In comparison 22.4% of Serbian and as far as 50% of Croatian companies use Internet for e-Purchases, and e-Sale is used by 19% of Croatian and 19.9% of Serbian companies.

Table 3. Internet usage in enterprises

Country	Macedonia	Croatia	Serbia	EU 27
Banking & finance	70.80%	84.00%	78.10%	78.00%
Training & education	38.20%	29.00%	22.20%	24.00%
Using e-Gov services	75.80%	61.00%	69.10%	68.00%
E-purchases	8.20%	50.00%	22.40%	28.00%
E-sale	5.00%	19.00%	19.90%	16.00%

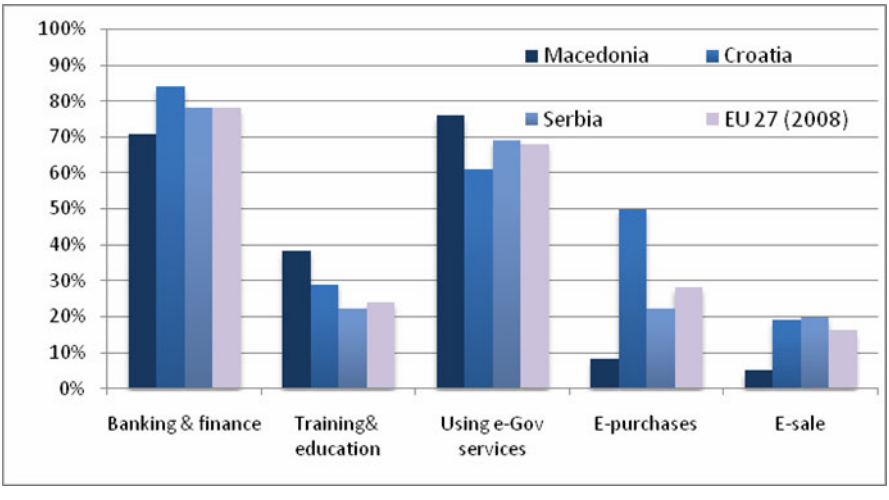

Fig. 3. Internet usage in enterprises

The next analysis concerns e-Government services usage by enterprises. Companies used e-Government services only to obtain information in 72.8 of Macedonian, 56% of Croatian, and 95.7% of Serbian companies. Forms download was used by 65.1% of Macedonian, 56% of Croatian and 86.6% of Serbian companies. Submitting of Forms was used by 32.1% of Macedonian, 37% of Croatian, and 47.4% of Serbian companies. Completion of e-Administration procedures was performed by 24.8% of Macedonian, 36% of Croatian, and 20% of Serbian companies. Public procurement (tenders) by electronic means was used by 14.5 of Macedonian, 13% of Croatian and only 7.80% of Serbian companies. These figures give us ground to conclude that the level of sophistication for e-Government services can and should be further developed, especially in providing of paperless procedure for conducting government business services and public procurement. Using results provided by [10], we can conclude that the take-up of these services should be also improved, to close the gap between facilities provided by governments and the actual use of e-Government services by companies.

For the purposes of e-Business, one of the most important prerequisites is keeping data in electronic form and ability to use and exchange this data by electronic means. These results are very interesting (Table 4 and Figure 4).

Table 4. Companies that use automatic data exchange

Country	Macedonia	Serbia	EU 27 (2008)
Automatic data exchange	29.10%	20.80%	40.00%
sending orders	21.00%	73.00%	20.00%
receiving e-invoices	13.00%	68.00%	18.00%
receiving orders	19.20%	67.40%	19.00%
sending e-invoices	9.10%	60.20%	10.00%
CRM	25.40%	23.00%	26.00%
ERP	19.60%	11.30%	16.00%

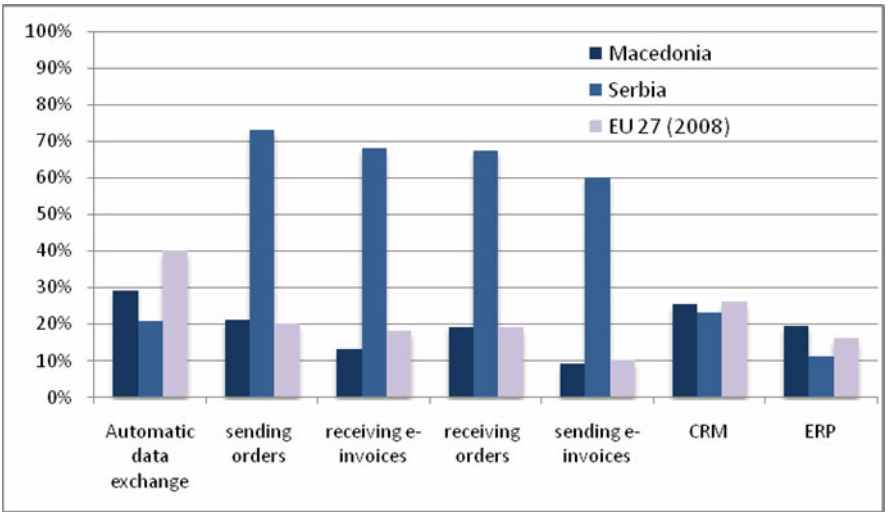

Fig. 4. Companies that use automatic data exchange

There are fairly big discrepancies in use of automatic data exchange, ERP and CRM software on one side, and electronic orders and invoices on the other. From Table 4 and Figure 4, we can see that automatic data exchange is used in 29.1% of Macedonian and 20.8% of Serbian companies, ERP is used in 19.6% of Macedonian and 11.3% of Serbian companies, and that 25.4% of Macedonian, and 23% of Serbian companies use some kind of CRM software. These numbers show slightly bigger take-up by these technologies in Macedonian, than in Serbian companies. In contrast, 73% of Serbian companies send electronic orders, compared to 21% of Macedonian, and 68% Serbian and only 13% Macedonian companies received electronic invoices. The situation with receiving orders and sending electronic invoices is quite similar – 67.4% of Serbian and 19.2% of Macedonian companies received electronic orders,

and 60.2% of Serbian and only 9.1% of Macedonian companies was sending electronic invoices. This great difference in automatic data exchange used and working with electronic documents is most likely due to inappropriately data gathering methods, sample size and understanding of what is e-Purchase or e-Invoice.

5 E-Government Services

In the last ten years, there were a great number of projects and activities involved in the development of the E-government concept, which all led to the stadium in which Macedonia is today compared to other European countries, as pointed by M. Gusev et al. [8], and in the CapGemini report [18].

From this study, we excerpt the situation on online sophistication of twenty basic services, which describe the level of e-government development, and the services available for business and citizens alike. The current situation of online sophistication is shown on Figure 5, and as we can see, Macedonia has scored 53% on this benchmark, or 73% for business services and 39% for citizen services.

The situation with full availability of the 20 basic services is not so good, as we can see on Figure 6. Today Macedonia is far behind all EU27+ countries, with only 20% full availability, which equals to four out of twenty basic services reaching the best possible level of sophistication measured by this benchmark, all achieved with business services, or 50% score, while citizen services score 0%.

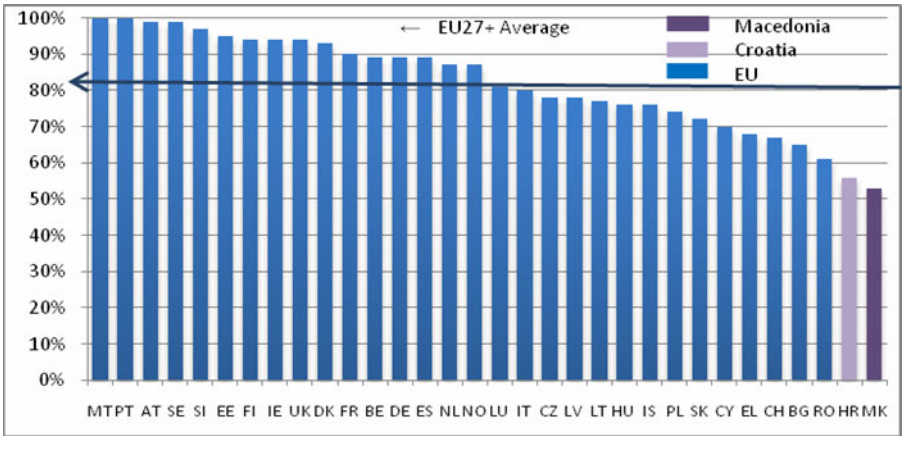

Fig. 5. Online sophistication scores for Macedonia and Croatia plus EU27+ countries

Croatia has participated in the European Commission's benchmark for the first time this year. In terms of full online availability, Croatia obtains 35% (see Figure 6). Business services are by far more mature: they obtain a score of 63% on full online availability as compared to the citizen services' score of 17% for this metric.

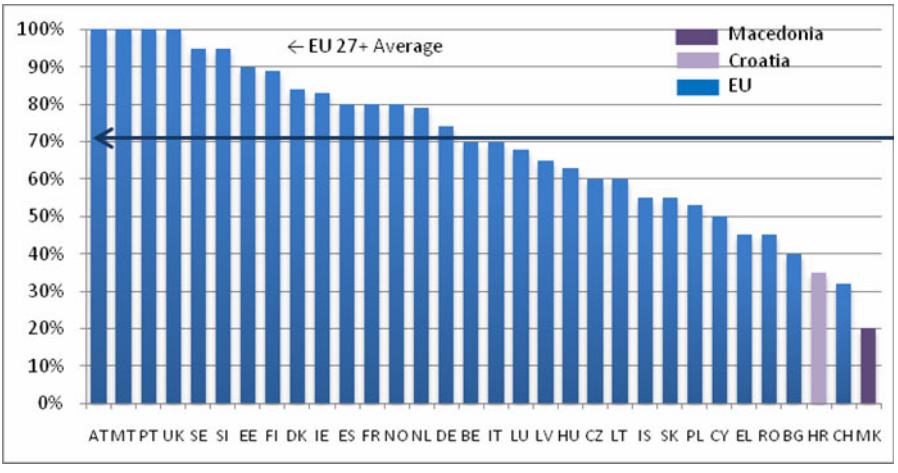

Fig. 6. Full availability scores for Macedonia and Croatia plus EU27+ countries

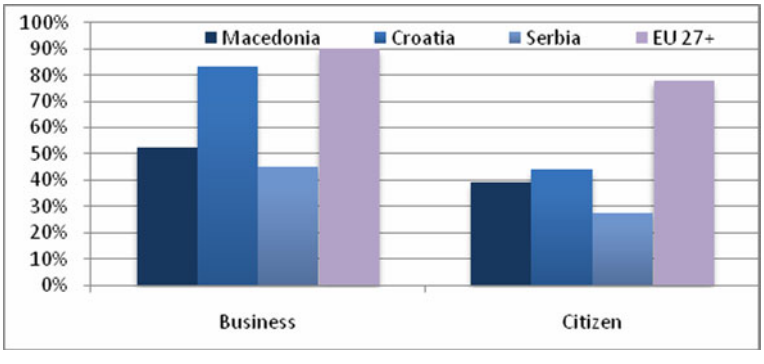

Fig. 7. Online sophistication scores for Western Balkan countries

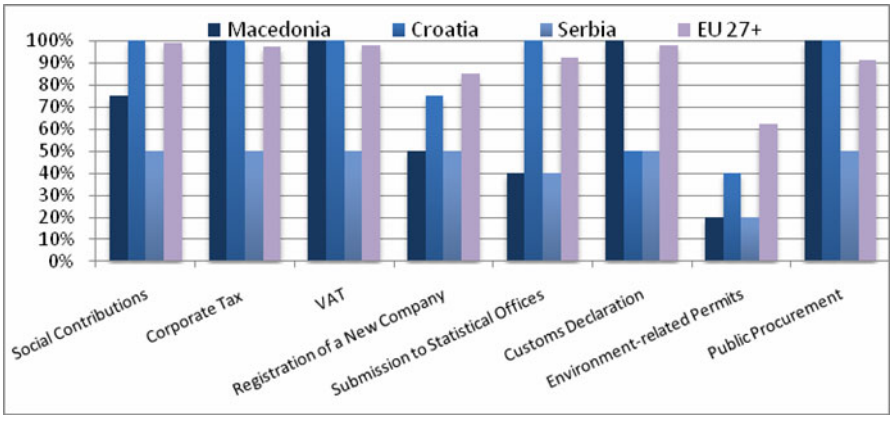

Fig. 8. Business services for Western Balkan countries

In terms of online sophistication, Croatia marks 56% (see Figure 5). This score can be split into an online sophistication score of 44% for citizen services and 74% for business services, with again a marked gap between the quality of supply for businesses and citizens.

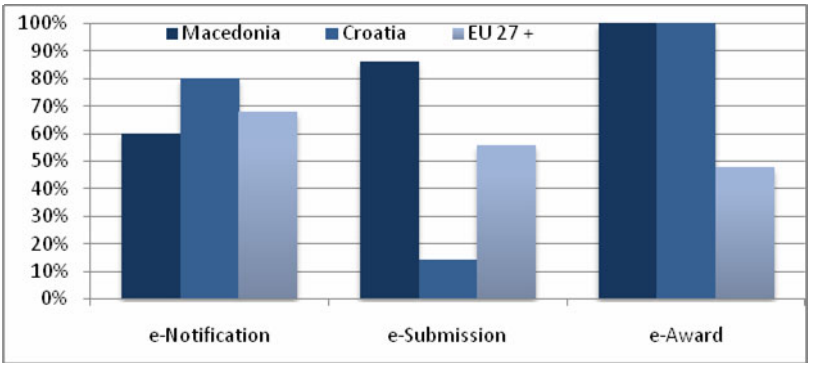

Fig. 9. E-Procurement results for Western Balkan countries

Regarding E-Procurement sophistication, both Macedonia and Croatia have made significant advancement in the last few years, and score better than EU average. For this year's benchmark, results are provided only for pre-Award phase, while post-Award phase will be included in the future. Since post-Award phase mostly comprises of e-Ordering and e-Ordering, we will give approximated insight into this phase in the next Section. As we can see on Figure 9, Macedonia scores 60% on e-Notification, while Croatia scores 80%. Macedonia has better score for e-Submission sub-phase (84%), while Croatia has only 14%. Both Macedonia and Croatia have achieved perfect score in e-Award sub-phase.

6 E-Business Survey

The e-Business survey was conducted according to the eBiz4ALL project, and in this paper we summarize results of individual research in Macedonia, Croatia and Serbia. [2] There are some discrepancies in the questionnaires used, so we include only those questions that were used in two or more countries, so as to present comparative picture.

On Figure 10 we can see that the complete awareness of e-Business benefits is entirely clear to 35% of Macedonian, 26% Croatian and 42.86% Serbian companies. Partial insight into benefits of e-Business is present in 55% of Macedonian, 74% of Croatian and 42.86% of Serbian companies. We can notice that all Croatian companies are at least partially informed about e-Business benefits, and that only 10% of Macedonian and 14.29% of Serbian companies are not aware of it. In average,

34.62% of the companies in all three countries are completely aware of e-Business benefits, 57.29% partially, and 8.1% have no information about e-Business benefits (Figure 10).

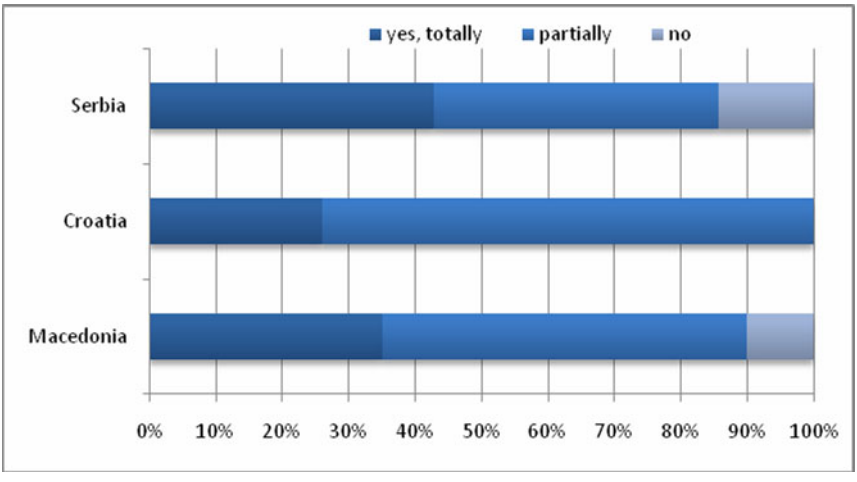

Fig. 10. Awareness about benefits of e-Business

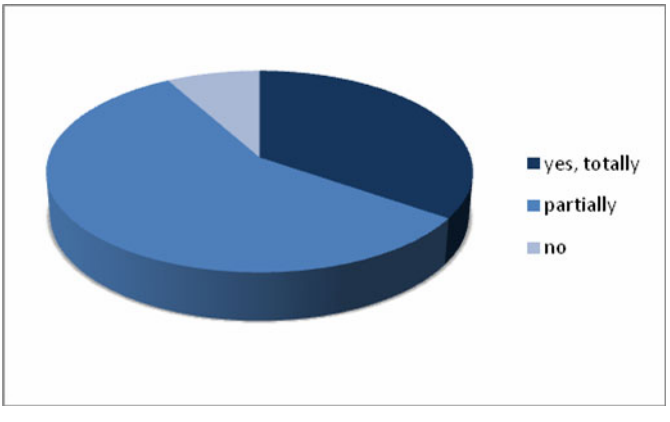

Fig. 11. Average awareness about benefits of e-Business

On the question about their timeframe to introduce e-Business into their companies, we have results on Macedonian and Croatian companies, as we can see on Figure 12. 45% of Macedonian and 66% of Croatian companies have answered that they will introduce e-Business at the latest in the first half of 2010, 17% of Macedonian and 11% of Croatian companies will introduce it in the second half of

2010, and 38% of Macedonian and 23% of Croatian companies set a later date. In average, 55.5% of companies should already use e-Business solutions, and 14% will start introducing e-Business till the end of this year.

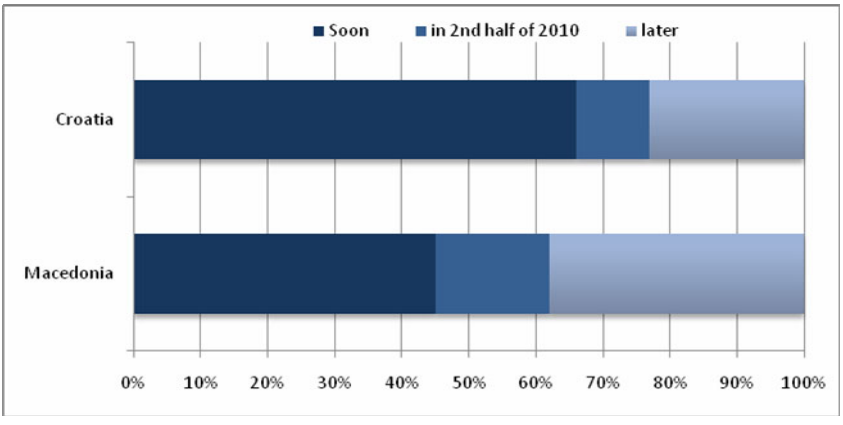

Fig. 12. Timeframe to introduce e-Business

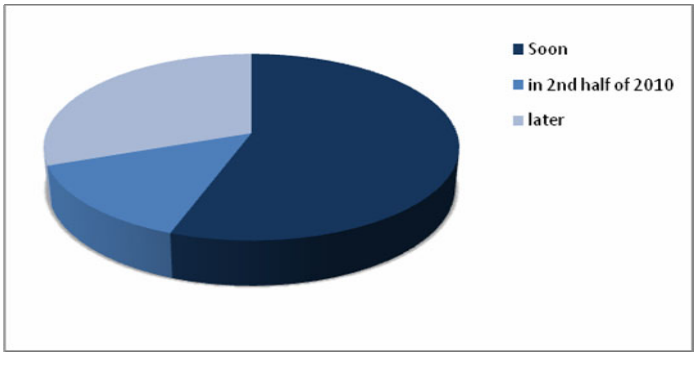

Fig. 13. Timeframe to introduce e-Business (average for Macedonia and Croatia)

Last question was about standards used when using automatic data exchange. Our survey has shown that Statistical Office of the Republic of Macedonia has made survey for e-orders and e-invoices according to their e-mail exchange of scanned version (mostly pdf, jpg), not by exchange of information as defined by the definition of e-Ordering or e-Invoicing. This means that the companies will print their invoices and orders, then make scanned version, and then exchange with other companies by e-mail (sometimes even they exchange word docs). Therefore, we here present results for Croatia and Serbia.

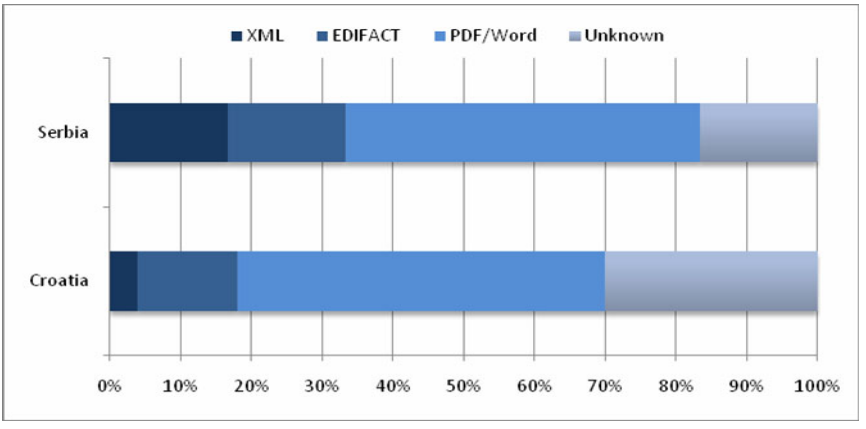

Fig. 14. Standards used for data exchange between companies

As we can see from Figure 14, 33.4% of Serbian companies use proper type of documents for exchange of information (16.7% use EDIFACT and 16.7% use XML), and only 18% of Croatian (14% EDIFACT and 4% XML). 50% of Serbian and 52% of Croatian companies use and exchange standard document types (doc, pdf or even pictures). On average, these figures are 10.35% XML, 15.35% EDIFACT, and 51% standard document types, as is shown on Figure 15.

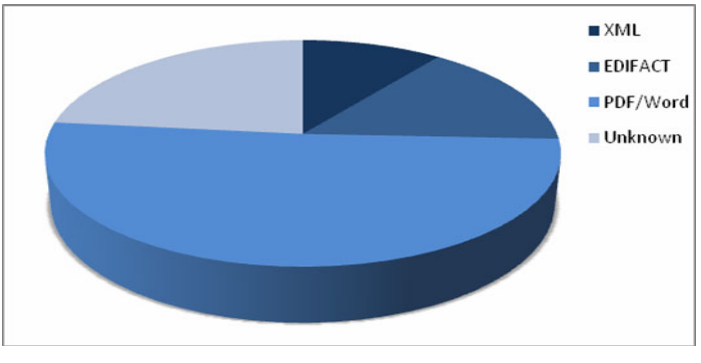

Fig. 15. Average use of standards for Croatia and Serbia

7 Conclusion

In the ever-changing world of business today, usage of ICT is essential for survival and development of small and medium enterprises. Results provided by surveys conducted as part of the eBiz4ALL project, and data from Statistical Offices give us insight into adoption of IT and e-Business by companies in Macedonia, Croatia and Serbia.

From the results shown, it is clear that although great deal of companies have Internet access, only a part of them has developed network infrastructure, and that only one third of them have intranet, and that every sixth company has extranet. This fact severely decimates companies' capabilities to exchange data inside the company or with their partners. Furthermore, we can see that Internet usage for purchasing and selling is too low, so companies exploit benefits of the open Internet market only on small scale. Finally, we can see that only small portion of the tenders is accomplished by electronic means, which lowers the chances of fair competition between companies. This fact will change with the obligatory use of electronic tender platforms in these countries.

Results provided by business surveys show that although great number of companies acknowledges benefits from using e-Business, only small share of them has already implemented it, and that the others plan to do so in the near future. What worries the most is the fairly small part of the companies recognizes that e-ordering and e-selling must implement use of sanctioned standards, such as EDIFACT and XML, and that still a great number of companies use software to produce documents, which are to be printed and distributed in paper form. We find this a key point where companies should be educated by the benefits of using electronic means of signing, distributing and keeping documents, as essential part of e-Purchasing and e-Business. A very big problem arises in legislation, changes and adoption of legal docs in Western Balkan countries due to the transition process in last 20 years.

We can conclude that these countries are not yet ready to accept the challenges of new ICT technologies and therefore can't exploit their benefits. The delay in adoption of these technologies shows that Western Balkan countries have delay between 5 and 10 years in adoption and usage of ICT for business and government usage, meaning that after 5 or 10 years these countries will be capable to have adaptation and usage levels the developed countries have now. In this period these EU countries will advance even more. The only way out to catch up the development tempo is huge investment in sophisticated ICT technologies (and have high scores like those for e-Award).

The governments in Western Balkan countries could play a significant role by adopting laws, which make e-procurement mandatory in the government sector. This would act as catalyst to the private sector to introduce e-business and e-procurement quickly.

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