# An Insight into E-Business Developments in Croatia

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## Abstract

**Development and presence of e-Business is an important factor of national economy. In Croatia, the banks were most successful in that aspect. Health authorities follow the suit with some delay. The e-Invoicing as the most popular aspect of e-Business has been obstructed due to inadequate legislation. Smart identity cards containing personal identification numbers and electronically supported administrative activities towards the Government are prerequisites for full spreading of e-Business. The paper is based mostly on the author's and his close colleagues' personal experience.**

The number of Internet users in Croatia is 53% of inhabitants aged 15 or more [1]. With this rate Croatia is situated close to some other European countries like Italy and Poland, but lagging behind neighbors like Hungary or Slovenia. Enabling a broadband access to Internet to every citizen and institution is among the Government's priorities. Nevertheless, the Croatian Government has not been the main driving force to introduce e-Business niche called G2*(where * may stand for the letter denoting **C**itizens, **B**usiness or other **G**overnment institutions), as it was observed in Scandinavia and the Baltic countries. Rather surprisingly, the main promoter of e-Business in Croatia has been the banking, although this activity requires a high degree of trust and secrecy [13]. These aspects can otherwise be among the principal obstructers of e-Business. With 27.50% of Internet users being also users of e-Banking, Croatia is leading over countries like Italy, Spain or Slovenia [2]. Why exactly banking, how it happened, what are the lessons learned and how to apply them in other fields? The success of e-Banking resulted from a notable financial motivation of the stakeholders. The former state-owned agency in charge for financial transactions among legal entities had ceded this business to banks. The classical service offered by the banks was more expansive and slower. At the same time, the electronic business channel became ripe enough to offer a prompt and cheap service. Within the first 6 months, already 40% of legal persons had become e-Banking users, at least in a part of their transactions [7]. The rest of e-Business here has not been exposed to such a compulsory change and the die-hard habits for doing business in classical ways are present.

Since a couple of years a standing committee sub auspices of the Ministry of Economy, Labor and Entrepreneurship has been promoting the introduction of e-Invoice as the most important document in e-Business. It was fighting most of the time with obstructive legal regulations regarding VAT within the Ministry of Finance. It contained the requirement that an e-Invoice has to be also printed on paper. Fortunately, it seems that this obstacle would be removed soon. In the meantime, some important Croatian companies have started issuing e-Invoices, initially among members of their corporation but then also to their main trading partners, from large enterprises to SMEs. Unfortunately, they had to print them also on paper! Their technological platform for e-Invoicing might have already become obsolete but that should not surprise anyone in the computing industry. Although publicly everybody claims to follow the last fad of technology, one can still remember the problems known as Y2K in the year 2000. In many respectable world companies it became known that they depended on decades old COBOL applications. Likewise, anyone waiting for a database or operating system to become the ultimate standard, would have been waiting for decades and further on. Therefore, the present system can be exploited; some provider can take care for format conversion to make it compatible to up-to date and to other currently applied norms and formats.

Independently from e-Business, attempts with e-Health have been present. Telemedicine seems to have been the trigger [10]. The idea of telemedicine in a small country like Croatia can still be quite attractive having in mind

relatively remote islands which can easily become isolated from the rest of the world during a winter gale. Although some equipment has been procured, the state of art is not exactly as expected. The obstacles were mostly of organizational nature. Much attention had been paid to the proper choice of equipment, while the organizational issues such as who would be in charge and under what conditions to offer service in telemedicine was neglected [11]. An attempt to computerize health care in a Croatian region using the loan of the World Bank was an outright failure. An incompetent, allegedly internationally renowned company got the job and did practically nothing, except spending money and recycling of findings from another close country. Later on, computerization of primary health care succeeded to a certain extent, but far from being unified and standardized. Computerization of hospitals, attempted by the Ministry of Health, was abandoned due to change of Government after elections [9]. Already at that time, a central health server was envisaged. With few years of delay, the project was revitalized in 2010 and some signs of success are visible, such as the countrywide substitution of on paper printed recipes with e-Recipe. Paperless referrals to hospitals, to specialist treatments and laboratory examinations are to follow. Simultaneously, a data base of patients' electronic records is being built, although future improvements in its design should be expected.

An important issue in any e-Business related activity is personal identification and authentication. In e-Banking the authentication issue has been solved by issuing individual tokens to all the interested customers. The tokens are activated using PINs. In e-Health, smart cards were issued to medical personnel and a financial state agency is providing the PKI. However, complaints have been heard that the price of e-Signature services were contra productive for e-Business. Smart cards have also been issued in some closed systems like to the student population with the principal goal to enable for them subsidized aliment in contract restaurants [12] [15]. Later on, a pilot project introducing e-Index was completed. On the country level, the problem of properly identifying the citizens has not yet been solved. It experienced a serious setback in 2003 when an already well established unique citizen identifier system was abolished under a pretense that it revealed the entire information about a citizen and that it seriously endangered personal privacy. This assumption was completely wrong, because the only information it was revealing was the person's sex, date and region of birth. New inappropriate identification cards were introduced. Author of this paper suggested introducing of a non-revealing personal identification number immediately [14]. Unfortunately, this was done with 7 years of delay and this new identification number is now in existence but it is not present yet on any identification document. Nowadays, one can only speculate whether that abolishment had been the result of technophobia and high degree of ignorance among the political decision-makers, as the author of this paper believes, or was it done to some nasty purpose. Introduction of new smart identity cards would be indispensable for faster expansion of e-related activities. The recommended standards mentioned in [5] and [6] were inspired by examples from Belgium and Estonia.

One of important activities close to e-Business is e-Learning. Certain results have been achieved while some others have been stopped due to the recent economic crisis [4]. This is a wide area deserving a separate paper and it was not treated here.

## Conclusion

It can be argued whether an e-Invoice, as the most important e-Document, requires electronic signature or not. If not, that could make e-Invoicing cheaper and easier? Once that legal obstacles will have been removed, the speed of implementation will mostly depend upon the decision maker's' motivation. There is a group of professionals in Croatia offering efforts to popularize the field and educate the users. The author of this paper appreciates their effort but he believes that the success would mostly depend upon ease of use offered as a service. The most useful act that the Government can do would be the introduction of smart identification cards containing the personal identification number. It should immediately enable G2C and G2B operations. G2G can precede or will follow naturally. The judicial system offers impressive possibilities for improvement [3]. Much can be discussed regarding the direct financial savings while applying e-Business. Although this savings can probably be more convincing than the savings or alleged savings while introducing information systems [16], the same can be said as for information systems. Even if the direct savings could not be proved, everybody was computerizing. It was clear that anyone who does not introduce an information system, may expect to leave the business. Likewise, e-Business does not only or does not principally bring savings in paper, postage and manipulation costs. It is an enabler for better decision making and faster response to market demands what is indispensable to assure any future in business.

## References

[1]     Number of Internet users in Croatia in further increase (in Croatian), http://www.e-hrvatska.hr/Novosti-i-najave/Novosti-iz-e-Hrvatske/Broj-korisnika-interneta-u-Hrvatskoj-i-dalje-u-porastu, Accessed on 17 February 2011

[2]     Internet banking: Croatia regional leader (in Croatian), http://www.moj-bankar.hr/Analize/Internet-bankarstvo--Hrvatska-lider-u-regiji--/297, Accessed on 17 February 2011

[3]     Nakić-Alfirević, Tomislav, Computer-supported improvement of business processes in the judicial system, Master Thesis, Mentor: Kalpić, D.; FER, Zagreb, 2011

[4]     Hudec, Goran; Kalpić, Damir; Zimmer; Kristijan, E-Learning as Worldwide Support to Education of Language and Culture for a small country' s Diaspora, The Proceedings of e-Leader, Hsu, Donald, Kuala Lumpur , Malaysia, (2009)

[5]     Batoš, Vedran; Bohaček, Zoran; Brčić, Mario; Fertalj, Krešimir; Hadjina, Nikola; Kalpić, Damir; Kovač, Mario; Magdalenić, Ivan; Mornar, Vedran; Skočir, Zoran; Smokvina, Ranko; Vanjak, Zvonimir; Vrdoljak, Boris, Standardization study for e-Business (in Croatian), Elaborates for the Ministry of Economy, Labor and Entrepreneurship, Zagreb, Croatia  (2009)

[6]     Kalpić, Damir; Bohaček, Zoran; Skočir, Zoran, Some aspects of standardization in e-Business (in Croatian) , e-biz2009 Case, Polonijo, Mislav, Rijeka, Croatia (2009)

[7]     Bohaček, Zoran, What, how and when - The Story of e-Banking in Croatia, Third International Conference on Software and Data Technologies, Volume ISDM-ABF, Cordeiro, Jose ; Ranchordas, Alpesh, Kumar ,Porto, Portugal (2008)

[8]     Kalpić, Damir; Mornar, Vedran; Kovač, Mario; Fertalj, Krešimir; Kos, Mladen, Establishment of computerization and e-services for public health in Croatia, 3rd Croatian & International Congress on Telemedicine and e-Health, Klapan I., Kovač M., Rakić M., Hvar , Croatia (2006)

[9]     Kalpić, Damir; Mornar, Vedran; Kovač, Mario; Fertalj, Krešimir; Kos, Mladen, An insight into efforts to establish computerization and e-services for public health in Croatia, Proceedings of the 2005 Networking and Electronic Commerce Research Conference, Gavish, Bezalel, Dallas, USA (2005)

[10]    Klapan, Ivica; Čikeš, Ivo, Telemedicine, ISBN 953-95168-0-3, Denona, Zagreb, 2005

[11]    Kalpić, Damir; Mornar, Vedran; Kovač, Mario, Personal authentication and privacy protection on Internet, Second Croatian Congress of Telemedicine with International Participation, Klapan, Ivica ; Kovač, Mario, Zagreb, Croatia (2004)

[12]    Mornar, Vedran; Palavra, Damir; Kalpić, Damir, Application of Smart Cards in Distributed Information Systems, Proceedings of the 26th International Conference on Information Technology Interfaces, Lužar-Stiffler, Vesna ; Hljuz Dobrić, Vesna, Zagreb, Croatia (2004)

[13]    Batoš, Vedran; Fertalj, Krešimir; Kalpić, Damir, Application of E-Commerce in Banking Industry, Proceedings of the 25th International Conference on Information Technology Interfaces, Budin, Leo et al., Zagreb (2003)

[14]    Kalpić, Damir, Also a Government group in charge of identification number (in Croatian), An interview led by Širanović, Vesna, Večernji list, Zagreb, Croatia (22.01.2003)

[15]    Mornar, Vedran; Fertalj, Krešimir; Kalpić, Damir; Krajcar, Slavko, Credit Card System for Subsidized Nourishment of University Students, Annals of cases on information technology. 4 (2002)

[16]    Mo Adam Mahmood, Garry J. Mann and Mark Dubrow: Amerireal Corporation: Information Technology and Organizational Performance, Challenges of Information Technology Management in 21st Century, pp 1037-1038, IRMA Conference, Anchorage, Alaska, 2000