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INFLUENCE OF e-BANKING SYSTEMS ON PROVIDING OF e-PUBLIC SERVICES

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Abstract. When analyzing the problems of effective realization of e-governance services one of the main issues becomes the interoperability of information systems and databases, distributed in different administrative departments. Effective realization of e-services usually requires information from distributed information systems stored and maintained in different formats and software environments. The rationally organized integrated infrastructure of distributed systems requires additional means and components of safe communication possibilities, organizational activities on the national and inter-European levels and software programs that speed up the realization of e-public services. Interoperability requirements of the distributed public administration systems concern physical, semantic and socio-organizational interoperability levels. The information technologies and representation methods play an important role in the development of electronic (e-) service applications to public administration. The main tasks of public service electronic delivery are analyzed in this article for the administration sector, using distributed information systems of e-banking service components. The highest level of automatic interactivity of e-services is reached in the tax and payment management area. The effective hotspots of e-banking systems and applicable integrated interfaces for consumers influence the popularity of these systems and take dividends for the growing economic value in the development of public administration services or the portal of e- government. The analysis of statistical indicators of e- public services is made on the effectiveness of distributed information systems applications. New tendencies are recognized according to statistical evaluation of indicators or electronic service abilities in the public administration sector.

JEL Classification: H110, G210.
Key words: distributed information systems, e-public services, e-banking services, system‘s interoperability.
Reikšminiai žodžiai: išskirstytos informacinės sistemos, elektoninės (e.) viešosios paslaugos, elektroninės bankininkystės paslaugos, informacinių sistemų sąveikumas.

1. Introduction

The main activity improvement priorities of state governance and business enterprises are related with knowledge-based economic development aims. One of the principal future-oriented goals of state and business enterprises is updating of institution activities by developing electronic (e-) services, i.e. by rendering possibilities for country residents as well as for state and business institutions to interchange information and data much easier and more conveniently. Much greater attention should be paid to innovations and the development of science and information technologies.

In the annual report (2006) of the European Commission (EC) [5], the following areas, deserving a particular attention of Lithuania, are distinguished:

- Strengthening of the science and technology base, by increasing the state sector funds for science and technology development (STD) in order to attain 1% of GDP in 2010;
- Much efforts should be put to influence the private sector expenditure on STD;
- Stimulation of active formation of labor market policy and labor mobility.

Based on the annual progress report (2006) of the European Commission, the European Council

set four priority spheres putting a special attention on particular future actions and investments into the knowledge and innovation sphere. In the EU policy framework "i2010 - An European Information Society for growth and employment" enlisted major objects and presented action plan on providing e-governance and strategic guide of public services means of information and communication technologies (ICT). In the scenario of action i2010 one of the basic goals is realization of the measures for establishing conditions for citizens and business representatives to use a convenient, safe, and concerted delivery of public services throughout Europe [6].

Requirements of information systems (IS) and a variety of database management systems maintained in different department of public administration gives rise to certain problems related with interoperability insurance of distributed IS in the creation of a common integral e-service rendering platform. Safeguarding of interoperability requirements would allow us to avoid surplus information accumulation in databases stored in different institutions and operating in different media. Due to different formats of databases management systems used in public administration institutions, new components of information transmission reception used in the interaction of IS. With a view to integrate distributed systems we have to find ways and measures to join operation of distributes systems by certain open platform using open standards and protocols which will enable a direct interaction of registers, cadastres, and IS on the state and interstate levels [1; 2; 3].

The aims of this research are to display the main requirements to assurance of distributed IS interoperability and to estimate possibilities of e- public service availability in the integral internet environment. One of the basic common actions is to ensure the interaction of components participating in the delivery of e-services. The paper analyses the indicators of the influence of banking e-services on the functions of e-service delivery in public administration sector.

2. Requirements to the Interoperability of Distributed Information Systems in Providing e-Public Services

When shifting e-services to a higher level of maturity, several important tasks must be solved in the integral system: identification and authenticity of the persons in the state information systems, reorganization of public administration relationships, regularize the requirements of integrality of registers and the architecture of e-services. These problems are related with mutual compatibility of the systems. Assurance of the operability of IS of public administration institutions is based on the integrated interaction infrastructure of distributed information systems such as e-governance service development. Where the public service portal would enable us to organize a safe and efficient interaction of distributed IS.

Interoperability can be interpreted as software ability to inter exchange data of different e-document format and to share information and knowledge by ensuring their functional compatibility [2].

The major technological peculiarities of contemporary distributed information systems are:

- the ability to operate in global computer networks and usage of information resources of these networks;
- systems are distributes, i.e. they keep their activities in organizations the subdivisions of which can be situated in large geographical territories in different time zones;
- systems can accumulate and process not only digital texts and data, but also spatial data, images, sounds, and other information of complex structure;
- along with data and information, so-called knowledge repositories of corporations are used;
- systems are intellectualized, i.e., they are able to use formal business and other knowledge;
- agent-based and wireless technologies, geographic information systems (GIS) and knowledge management systems, and other modern technologies are used;
- complex information analysis methods are applied which makes it possible not only to analyze and aggregate the information available, but also to generate quite new information for decision support.

Typical features of distributed systems are sharing of resources, openness, parallel process executions, extensibility of computer resources, and error toleration [3; 4]. Such systems require many processors, client-server architecture. Object inquiry is controlled with the intermediation of agents on the main CORBA standards. As usual, such intermediary software is standardized, applied system of client-server architecture are simulated as a set of servers providing services for a set of clients that exercise these services.

The common scheme of providing pan-European services is defined as an aggregate of standards and recommendations that describes the ways of reorganizing the work of systems so that organizations could communicate reciprocally [1; 2].

Interoperability has several significant aspects: requirements on organizational, technical, and semantic interoperability [2]. The requirements on organizational interoperability are defined as a capability to establish agents, providing services of particular e-governance, and organizational processes as well as to coordinate (with them) the interoperable structures of their interaction. The technical interoperability indicates the compatibility of information technologies and software systems – programs, usage of open standards and protocols with a view to create reliable, efficient, and effective IS. The requirements of semantic interoperability are interpreted as safeguarding the significance of information in the process of interchange are understandable in the same way for the persons involved in this process, software programs and institutions.

Thus, interoperability of all these dimensions should not limit itself on the national level. It ought to ensure efficient e- public services provision for citizens, business, and state institutions using open standards, open software, and user-friendly scenarios so that the service realized were accessible to as many users as possible [7; 8].

The program eEurope 2005 become the political basis for the interoperability realization in European countries. The interoperability is described as agreed program that stipulates e-governance service provision for all the citizens and enterprises of Europe. The program is based on the open standards and open code software. The main goals of European interoperability are:

- To provide e-governance services oriented to the end users, simplifying service's interoperability in interactions of "governance to governance" (G2G), "governance to business" (G2B) and "business to citizens" (B2C) areas;
- To refresh national interoperability schemas of EU members;
- To reach interoperability requirements inside one program and inter different EU programs.

The development of the portal "Government e-Gates" was one of the first steps to the services based on a 'single window' principle in Lithuania. Currently, there are more than 500 references to public services in the portal [5; 7]. Public services are grouped according to users, events, subjects and a list of national authorities. The information on services is available via Internet links to websites of authorities providing services. In the portal, citizens are identified on the basis of the approved certificate or through the electronic bank identification system. Currently, the portal makes it possible to request/pay for forms upon the declaration of a place of residence and family status, to check information on national social security, extent of medical services or medicines one has received, and to submit electronically documents to the Communications Regulatory Authority. In addition, the user may request to prepare an excerpt on criminal records and get information available in the registers.

3. Influence of Electronic Banking Systems on the Delivery of e-Public Services

The means of e-banking systems are inviting by the fact that they enable us to perform financial operations at any time and any place of the world, being thereto very safe and effective. Another advantage is that the majority of bank operations can be performed free of charge, or their valuations are considerably lower than the same services provided by a bank. It has been observed that e-banking service users of not each bank are able of using public services.

The statistics from the Information Society Development Committee (ISDC) under the Government of Republic of Lithuania shows number of online entries of each bank clients to the public service portal during 11 months (of the period 2006.11.26 – 2007.10.26). Distribution of the visitor's dynamics is presented in a chart (Fig. 1). The leader of visits is Hansabank (now renamed as Swedbank) that coordinated the payment system for e-services with ISDC.

During 11 months, 52675 Swedbank clients visited the public e-service portal online 29929 SEB Vilnius bank clients and 13930 DnB NORD bank clients in total. Using the certificates of the Digital Certification Centre there where 206 entries online (see Fig. 1).

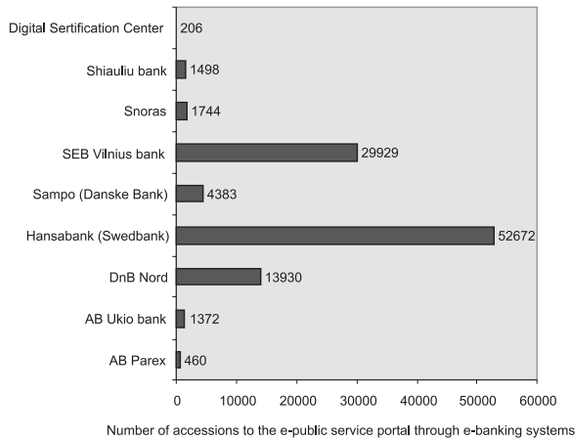


Fig. 1. **The illustration of accessions to the portal of e-governance services from the clients of different banks (evaluating the period from 26-11-2006 until 26-10- 2007) in Lithuania**

49,6% of entries online to the public service portal were from the Swedbank e-banking system. Hansabank (Swedbank) was the first one of all the banks to sign the agreement with ISDC regard to coordination of the identification system with the public service as well as to modify the e-payments system.

By the e-mail addresses obtained from bank websites, inquiries were sent with a request to indicate the number of bank clients that used e-banking services (Table 1).

Table 1. Distribution of e-banking services used for e- public services

Title of bank	Number of clients who requested e-banking service	Number of online entries to the public service portal via e-bank systems	Is there a possibility for bank clients to pay for public services
AB Parex bank	21900	460	No
AB Ukio bank	37400	1372	No
DnB NORD bank	confidence	13930	No
Hansabank (Swedbank)	confidence	52672	Yes
Sampo (Danske Bank)	confidence	4383	No
SEB Vilnius bank	confidence	29929	No
Snoras	confidence	1744	Yes
Shiauliu bank	-	1498	No

It is planned to implement a project by 2008 with one of the main goals to develop and introduce a uniform data exchange interface enabling an interoperability between national registers and information systems which would assist in managing national administration issues as well as providing public e-services to the population and economic operators in accordance with the 'single window' principle. The frequency of online entries is twice as large as the number of clients (consequently); a client enters the e-government portal online twice a month on the average. The greatest attendance of the e-public service portal was in March 2007, in summer the number considerably diminished; however, in August 2007 it began growing again.

During the first half year of 2007 there were 7070 requests the certificate on declaring the place of residence, but only 229 of them (3,42%) were submitted by e-mail, while the remaining part 96,76% was in the usual way (Fig. 3).

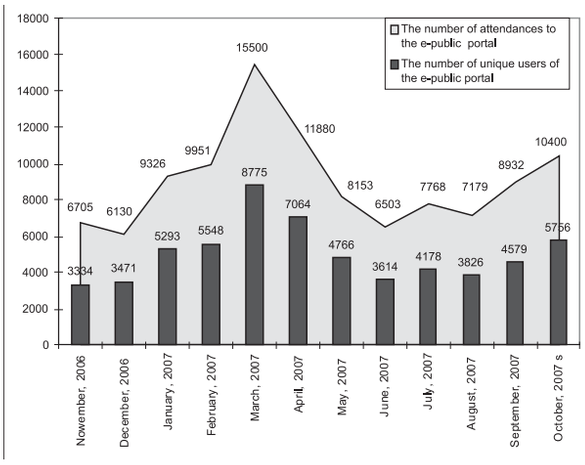


Fig. 2. **The dynamics of attendances to the e-government portal and number of unique users of the portal**

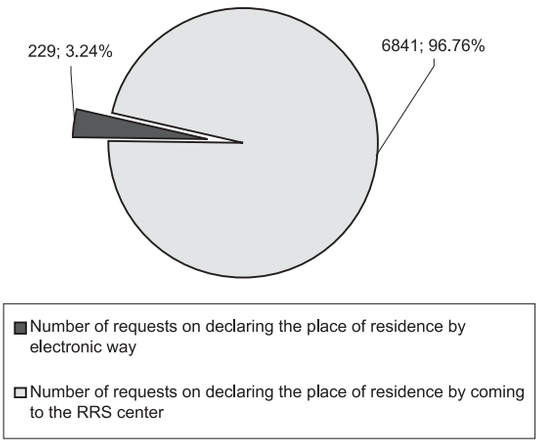


Fig. 3. **The comparison of ways for requests on declaring the place of residence (during the first half of 2007)**

The analysis of reasons of this statistics points out to the influence of certain factors:

- only two banks allow to be paid for to provide e-public services for there bank users free of charge (the public e-services provided);
- the service for giving a certificate is to be paid, while municipality or local governments give a certificate free of change upon arrival there (not by e-mail);
- there is leach of information at the public internet access points how to use the public services.

Mass media of the society informs about installed e-services, then abilities and advantages, computer literacy courses are organized free-of- charge in distant townships and country settlements, public internet access points are also established, which ma-

kes e-services accessible not only for city, but also for rural inhabitants.

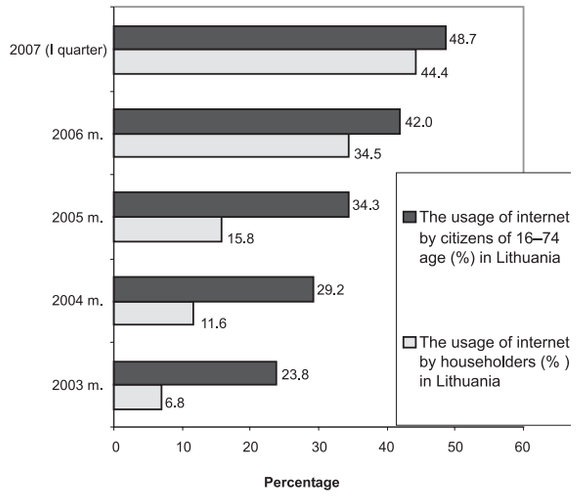
At present, the project of developing Information System interoperability capacity is in progress that will help solve the problem of compatibility of distributed systems. As one of the principal means is a possibility to render e-services following the principle of "one-window". ISDC can give some statistics on the one- window (pane) entries online, but it cannot influence the administration account of e-service providing.

4. E-Public Service Availability for Lithuanian Citizens

The importance of e-services is directly connected with the internet usage. This number is not so large, but it is rapidly growing in Lithuania (Fig. 4). According to the most recent report, Lithuania has 1,083 million Internet users and 1,301 million Internet hosts. These facts combined with facts about Lithuania's fast-growing economy and its exports to the EU make Lithuania an interesting e-commerce hub [7; 8].

The state of e-public services is estimated in live with a certain automation maturity level of the performance:

- the first level is public services of informational nature, where Public Administration institutions submit information on the internet by electronic way;
- the second level – guaranty of interaction which offers a user more extensive abilities, e.g., we can acquire electronic forms by means of internet, however, often filling them out we have to submit them in traditional ways – by post, fax, or personally, etc.
- in the third level of bilateral interaction we can not only get information, but also send it to other institutions by e-mail;
- the fourth level is completely computerized (automated) e-documentation including form submission and payment, i.e., full service (e-commerce, remittance of money, settlement for services, trade of securities, and many other capabilities);
- the fifth level means personalization, authentication and mutually recognized e-identification, convenience, transparency and accountability (possibility to observe the process) verbosity and the like.



Source: data from the Department of Statistics under the Government of Lithuania Republic)

Fig. 4. **Illustration of the usage of internet by citizens and householders in Lithuania**

Other is wide spectrum of e-services both in the activities of the public administration sector and in the activities of business enterprises is accessible for people capable of using the internet. The key point now is analysis of efficiency of then use. Lithuania is planed to transfer 90% of the main public services provided by state institutions into the electronic space in 2006-2008. Following the decisions of the i2010 Program, it is planed to transfer e-services to the fourth maturity level meant for citizens and business subjects by means of ICT:

- income and property declaration;
- search for vacant working positions;
- assignment of social insurance pays and compensations (for unemployment, social insurance, grants, allowances for families and children, etc.);
- many other daily services for citizens and business subjects.

The list of e-public services is provided to business: the tax declaration, registration of new enterprises, the statistical data submission to the Lithuanian Statistics Department, public purchases using ICT, payment of social insurance installments, customs declaration, and delivery of permissions (licenses) to be concerted with environment protection offices.

At present the best developed public e-services are related with tax declaration of inhabitants and legal persons, entities state social insurance installments, customs declarations and submission of statistical data, employment, and the services rendered by public libraries.

The Residents' Register Service (RRS) together with the ISDC has already installed e-services for

declaration of the location, locking of certificates and presentation of personal data stored. There services are accessible by entering the public e-service portal via banking systems or using a e-signature (digital certificate), issued by the Digital Certification Center. The above e-services have been available since November 26, 2006.

The statistical data presented by the ISDC show that during 11 months 363 certificates were ordered for declaring the location or family structure. These services are of the third maturity level: bespeak them by internet, one can get them by post or personally up on arrival the registry office.

Though internet services and e-banking are getting ever more popular the certificates delivered are a small quantity. The low popularity of e-service is strongly influenced by its' cost for ordering a certificate of e-signature from RRS. Only two banks – Swedbank and Snoras bank– can pay for the e-service of then clients though other banks have also signed on agreement with ISDC.

E-public services can be classified into two groups: the e-services aimed at business and that meant for citizens.

The development of information and communication technologies (ICT) is rapidly growing in Lithuania. In 2005, only 109 providers notify services of internet access. In 2006, this number grow up to 2,2 times and made up 32% of householders [7; 8].

In the development of e-governance, the greatest attention now is paid not to infrastructure or accessibility (supply of services, interactivity level), but more to use and effectiveness (usefulness and efficiency). New aims are posed to e-governance: e-service utility for users and the use for increasing efficiency and transparency of the public sector; not to require information on citizens that can be found in databases of other institutions or state registries.

The laws on e-business and e-documents are prepared rather slowly. E-signature is successful used in many countries, including our neighbor Estonia. Without approving chip cards of authentication several years ago our politicians slowed down the process of e-signature realization.

Conclusions

The EU regulatory framework has had a largely positive impact on European electronic communication markets, but has been unsuccessful in delivering sufficient consistency in regulatory approaches. The fragmentation of regulation across the 27 Member States, including the enforcement of remedies, threatens to become a serious obstacle to the development of the Single Market and to hinder the emergence of pan-European services.

E-public service consists of systems with interacting components a piacemeal approcah to technology change is unlikely to succeed or achieve the desired results. Threre's a need for holistic and integrated approach to manage.

In the development of e-governance, the greatest attention now is paid not to infrastructure or accessibility (supply of services, interactivity level), but more to use and effectiveness (usefulness and efficiency). New aims are posed to e-governance: e-service utility for users and the use for increasing efficiency and transparency of the public sector.

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ELEKTRONINĖS BANKININKYSTĖS ĮTAKA VIEŠOJO SEKTORIAUS ELEKTRONINIŲ PASLAUGŲ TEIKIMUI

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Anotacija. Nagrinėjant elektroninės (e.) valdžios paslaugų efektyvaus įgyvendinimo klausimus, viena pagrindinių problemų tampa atskiruose administraciniuose padaliniuose išskirstytų informacinių sistemų sąveikumas. Daugeliui atliekamų atsiskaitomųjų operacijų nepakanka vienos institucijos saugomų duomenų, todėl racionaliai į bendrą veiklos infrastruktūrą turi įsikomponuoti išskirstytų sistemų saugaus bendravimo galimybės, nacionaliniu bei tarpeuropiniu lygmeniu kuriamos kompiuterinės programinės priemonės, paspartinančios efektyvesnį e. viešųjų paslaugų diegimą. Informacinių sistemų sąveikumo reikalavimai svarbūs bendrai naudojamų, tačiau skirtingose institucijose administruojamų ir palaikomų duomenų bazių fizinio, semantinio bei socialinio sąveikumo lygiams. Straipsnyje naginėjami viešojo sektoriaus išskirstytų informacinių sistemų sąveikumo užtikrinimo klausimai, susiję su elektroninių viešųjų paslaugų teikimo galimybėmis, pasitelkiant bankų elektroninės prieigos sistemų komponentes. Didžiausia interaktyvumo lygį pasiekia e. paslaugos, susijusios su mokesčių administravimo ir atsiskaitomosiomis paslaugomis. Elektroninės bankininkystės prieigos taškai ir šių informacinių sistemų perspektyviai plėtojamas vartotojo sąveikos integralumas turi įtakos jų populiarumo augimui ir pačių elektroninių viešųjų paslaugų ekonominiam atsiperkamumui. Taip pat pastebima, kad kai kurie identifikaciniai mechanizmai, sukurti e. bankinėse operacijose, gali pakeisti kai kuriuos elektroninių dokumentų sąveikavimo komponentus, užtikrindami pakankamai patikimą veikimo aplinką. Viešojo administravimo sektoriaus elektroninių paslaugų mokestinių atsiskaitymų teikimo galimybės gyventojams ir verslo subjektams perspektyviausiai pasireiškia per bankinius prieigos komponentus. Europos Sąjungos iškelti išskirstytų informacinių sistemų sąveikumo reikalavimai apima platų spektrą nagrinėjamų kriterijų, kurie perteikiami atvirųjų standartų ir įvairių iniciatyvų priemonėmis, norint sukurti visos Europos administravimo elektroninių paslaugų tinklą, užtikrinant saugumo, asmens ar ūkio subjekto tinkamo identifikavimo klausimus tokioms sistemoms sąveikaujant. Straipsnyje analizuojami bankinių informacinių sistemų įtakos rodikliai viešojo administravimo sistemos elektroninių paslaugų vykdymo funkcijoms atlikti. Analizuojant funkcijų statistinius rodiklius viešajame administravime pastebima naujų pokyčių. Šie pokyčiai keičia viešųjų paslaugų teikimo galimybės gyventojams, atsiranda naujos viešųjų paslaugų valdymo formos, grindžiamos šiuolaikinėmis informacinėmis bei komunikacinėmis technologijomis.

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