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DEVELOPMENT OF ELECTRONIC IDENTIFICATION MEASURES IN THE PUBLIC SECTOR OF LITHUANIA: ANALYSIS OF ALTERATION POSSIBILITIES

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Abstract

Purpose *– to analyze, assess and identify alteration possibilities of effective implementation of e-Identification technology solutions focusing on organization capabilities in the public sector of Lithuania.*

Design/methodology/approach *– different methods were used in the research. Content analysis method was used for the issues related to application of e-Identification solutions, technology management and organizational capabilities. During the pilot research, information on specificities of organization capabilities to implement e-Identification solution in the public sector was gathered, analyzed and interlinked with content analysis via comparative and deductive methods.*

Findings *– the research shows that the gap in the area of development of e-Identification solutions in the public sector in Lithuania is affected by the lack of organizational capabilities that need to be developed internally. The challenge is to foster organizational capabilities in the environment, influenced by rapidly emerging new technology solutions (use of smartphones and applications) and limited legal regulation. Lifecycle of any technology solutions becomes*

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shorter and jeopardizes its use and functionality in time; therefore, public sector institutions could benefit from holistic e-Identification solution diffusion strategy that incorporates aspects of organizational capabilities.

Research limitations/implications *– the research findings are limited by the nature of the pilot research (peer review), level of experience in their organizations and environment as well as the geographic scope of the research.*

Practical implications *– the article portrays public sector environment of implementation of e-Identification solutions and particularities of organizational capabilities to manage its development.*

Originality/value *– originality of the article is in the research and assessment of country specific future proof needs to alter and improve the existing strategy of implementation of e-Identification solutions focusing on organizational capabilities in the public sector of Lithuania.*

Keywords**:** *e-Identification, technological capability, technology management, organizational capabilities, e-Government.*

Research type**:** *research paper.*

1. Introduction

E-Identification technology management is still an important topic for public sector across Europe and other countries globally. What is more, e-Identification can be viewed as a global challenge, the most practical solution is to address this issue in the European context as use of e-Identification technologies has a specific regulation in the European Union (EU) intended for the EU Member States to develop information and communications technologies (ICT) in the national context of institutional set-up, legal and social-economic aspects (different strategies, legal provisions, experience, standards, etc.).

The difference between e-Identification and e-Signature is that e-Signature allows making users' intent or commitment on digital content, whereas e-Identification is a process of using person identification data in electronic form unambiguously representing a natural or legal person.

Use of any ICT solutions has its positive and negative impacts on front and back offices of the public organizations, but use of ICT is strongly affected by the organizational capabilities. Most of the public sector institutions are keen to follow the idea of a lean government, meaning ICT solutions ensure effective processes by reducing manual labor, saving time, etc. Such resources from clients' perspective should influence the value added to the provision of public e-Service. The use of ICT solutions in the public sector is an imperative for lean processes of e-Government (Bharosa *et al*., 2012; Juell-Skielse, 2011). Also, it is important to note the fast entrance and development of technologies, such as m-Government, that can be used as e-Government solutions to serve stakeholders.

The role of ICT solutions in every business or public sector organization depends on the value to that organization of the chosen and applied ICT solution. Development of the ICT solution is valuable as long as ICT functions are useful for the organization internally or serving its customers externally. That is where capabilities influence technology management decisions to invest, maintain, manage or abandon the ICT (Sabeel *et al*., 2012).

E-Identification is a precondition for the social, economic and legal relations. Use of electronic communications and e-Services is undisputedly growing. It is not possible to provide a non-electronic identification while seeking full service in the on-line environment carrying actions at a distance (Štitilis *et al*., 2011). According to the Report for the year 2012 on the implementation of the Electronic Signature Law of the Republic of Lithuania (Communications Regulatory Authority, 2013), only 13 percent (out of 3500 surveyed) of the public sector institutions will be capable to perform the exchange of e-Documents by the 1st of January 2014.

Digital Agenda of Europe (European Commission, 2010) introduced a goal that by 2015, a number of key cross-border services will be available on line and that 50 percent of EU citizens will be using e-Services. Taking into account the context of cross-border interoperability of public e-Services, there is a need to focus on assessment of alternatives to improve and to alter implementation of e-Identification technologies along with organizational capabilities in the public sector of Lithuania.

The aim of the article is to analyze, assess and select alteration possibilities for the implementation of e-Identification technology solutions focusing on organization capabilities in the public sector of Lithuania. Therefore, in the second section of the article, relation between green ICT and organizational capabilities is discussed. The third section touches on recent developments in the area of e-Identification in Lithuania. The fourth section explains theoretical background used for the pilot research and presents its results. Final sections contain a summary of main findings and provide conclusions.

2. Green ICT, lean government and organizational capabilities

Content analysis allows evaluating the existing knowledge about the ICT use in the public sector of Lithuania and its relation to the organizational capabilities. Information gathered and presented in this article shows that the overall goal of greener ICT and lean government is well acknowledged by the public sector, but there is a lack of knowledge on how to transpose these goals from a paper to a successful real life story. As it was mentioned earlier, effective use of ICT ensures the value to the user or client, such relation is impossible without invoking organizational capabilities.

The European eGovernment Action Plan 2011-2015 (European Commission, 2010) section on Green Government explains that ICT can be used in order to reduce the carbon footprint of public sector administrations, e.g. by implementing electronic archiving, using videoconferences instead of travelling, etc. According to OECD (2010), green ICT is also known as “smart ICTs” or “sustainable ICT”. In general, green ICT means

that ICT can help to "balance greenhouse gas emissions resulting from development, production and operation of ICT products against emissions reductions attributed to the application of these ICTs to improve energy efficiency elsewhere, e.g. in buildings, transport systems, electricity distribution or elsewhere. Besides these immediate impacts, ICTs and their application also affect the ways in which people live and work and in which goods and services are produced and delivered." Overall application of ICT has direct impacts (positive and negative – use of ICT to minimize cost of work or living, recycling of ICT and use of ICT to produce more goods), enabling impacts (optimization, substitution, induction or increase of demand for other products and greener choices), and also, ICT has systematic impacts on change in our behavior. As foreseen by the European eGovernment Action Plan 2011-2015, the Member States should have voluntarily developed and agreed on indications for measuring the reduction of the carbon footprint of their administrations as a result of e-Services (European Commission, 2010).

Thus, this article deals only with the use of a particular ICT technology solution – e-Identification – by public administrations. Application of e-Identification solutions adds value to the work process by ensuring that public administrations work in a greener way and help to improve organizational performance, people's choices and behavior. According to Aydinli *et al*., Bharosa *et al*. and Mahler, e-Identification solutions with its direct function to identify and to authenticate also allow us to do the following (Aydinli *et al*. 2009; Bharosa *et al*., 2012; Mahler 2013):

- To improve communication (to innovate, to save time for individual and public servants);
- To reduce operation cost (save on paper by using less);
- To manage documents professionally (more accuracy on handling requests or just ordinary day-to-day functions);
- To improve services;
- To enable trust (in the service, institution or government itself);
- To become flexible (to choose between acceptable form of authentication);
- To ensure cross-border functionality of services.

Use of ICT solutions can similarly have a negative impact on liability for action, data protection and security in cases, where legal provisions are not introduced or technology solution is not mature.

Thames and Webster (2009) explained that understanding of successful change cannot be just based on the latest technology, products, executive team or organizational structure. Optimal performance requires synchronization of individual and organizational mindset. Change in mindset from industrial to emerging is described by the shift to causative consciousness, abundance, relationship or wholeness and continuous processes. Ulrich and Lake (1991) foreseen that economic/financial capability, strategic/marketing capability and technological capability should be analyzed together with organizational capability. This is especially true when nowadays governments are facing expanding and complex workloads. The concept of lean government ensures that the use of ICT can cope with the challenges while having limited resources. Efficiency lies in the ways the systems of work are organized and how work processes are designed (Bharosa *et al*., 2012).

Public value is directly related to the organizational capabilities and ICT resources (Pang, 2011). Technology strategy has to do with a role of technology in organization and its management. In order to start managing ICT, any organization must understand that ICT is a tool that will have a great effect on the functionality of the organization, for that reason institution must monitor the changes in the technology structure. The role of the technology management is to understand the value of certain technology for certain organization or purpose. The development of the technology is valuable as long as it is valuable to the customer; therefore, an organization should make decisions when to invest to a certain technology and when to withdraw (Sabeel *et al*., 2012). Kortelainen and Lattila (2009) explained that management of capabilities is done through dynamic capabilities. While ICT management process is influenced by the current and predicted future customer needs, the authors conclude that dynamic capabilities push out outdated competences. Bouckenooghe (2010) argued that change process is a cognitive one; he drew attention to the Lewin's (1951) concept of unfreezing, changing and freezing, which explains the necessity to involve all members of the organization to perceive the change.

All uniqueness and innovation do not lead to competitiveness or advantage if tools used do not live to its expectations (Ulrich and Lake, 1991). According to Heeks (2010), the use of ICT must undergo four stages until it has impact on development: i) readiness (policy, infrastructure, digital divide); ii) availability (supply, implementation and design); iii) uptake (demand usage); and impact (outcomes, development contribution). Sabeel *et al*. (2012) argued that "S" curve, Technology Lifecycle Management (TLM) and Carnegie Mellon Capability Maturity Model (CMM) theories have some similarities in diffusion patterns and are capable to provide guidance in innovation management of complex technology systems. The "S" curve technology management theory gives in a broad term suggest technology emerges, grows, matures and ages. The TLM is a multiphase approach that involves planning, design, implementation, management of ICT infrastructure elements. The CMM helps to increase maturity levels of the process in the organization continuously improving and optimizing capabilities. In order to reach the highest level of the CMM – optimization, processes must step-by-step undergo through other phases of the CMM, such as project management, engineering, finding best solutions and managing change.

However, Cresswell *et al*. (2005, 2008) developed a toolkit for the assessment of dynamic capabilities depicting e-Government interoperability. It was designed and applied in the USA (e-Government leading country) with highly developed political, economic, organizational and social settings. The toolkit allows not only to measure the level of dynamic capabilities for e-Government interoperability, but also to determine how e-Government interoperability as dynamic capability is perceived by e-Government experts. Functionality of the toolkit was originally adopted and successfully validated by Malinauskienė (2010) to assess dynamic organizational capabilities for interoperability in e-Government context in Lithuania.

Government can use technology to reduce costs, to transform and to innovate (Cap Gemini, 2013). It can be noted that one of the top priorities of the EU is to be successful in cross-border services (European eGovernment Action Plan 2011-2015, European

Commission, 2010). Such issue is still much related to the compliance and liability. For the e-Identification solutions used in the EU Member States to be effective and to influence e-Government processes, it must be interoperable and capable to accept non-national e-Identification solutions in order to facilitate cross-border challenges (Mahler, 2013). Therefore, content analysis in this section is used to relate implementation of e-Identification solutions with capabilities, mainly to the technical capacity, organizational capabilities and proper skills to use ICT.

3. Recent developments in Lithuania related to e-Identification

The intention of this section is to compare data collected on the use of e-Identification measures in Lithuania. The comparison is made between the number of public and private e-Identification solutions used to access e-Services. Also, the comparison of the use of e-Identification solutions for access in Estonia, Latvia and Lithuania is provided.

According to the Report for the year 2012 on the implementation of the Electronic Signature Law of the Republic of Lithuania (Communications Regulatory Authority, 2013), a number of valid qualified certificates issued is growing. There are three entities that issue certificates in Lithuania: 1) Digital Certification Center (DSC); 2) Centre of Registers (CR); 3) Residents' Register Service under Ministry of Interior Affairs (RRS under MIA) (Table 1).

Table 1. Number of valid qualified certificates in the market according to the provider

Providers	Number of valid qualified certificates			
	2009	2010	2011	2012
DSC	4 311	11 530	15 057	19 583
CR	20 158	35 166	61 590	52 766
RRS under MIA[1]	219 000	451 000	644 465	709 746
Total	**243 469**	**497 696**	**721 112**	**782 095**

Source: **Communications Regulatory Authority** of the Republic of Lithuania (2013)

Also, it should be mentioned that it became popular for citizens to get a SIM card that allows forming e-Signature. Three major mobile operators (Omnitel, Bite and TELE2) have issued 13.397 qualified electronic certificates on SIM cards using RRS under MIA, while additionally, Omnitel has issued 11.706 valid SIM cards that allow forming e-Signature using certification services from the Estonian provider AS "Sertifitseerimiskeskus" (Communications Regulatory Authority, 2013).

1 Data provided by the RSS under MIA include a number of national identity cards and public servant cards that allow e-Identification, but that means that the same person can have two cards (national e-ID and public servant e-ID cards).

There are no technical possibilities to get information of an overall use of e-Identification/e-Signature cases. Therefore, the Communications Regulatory Authority (2013) has gathered data on dynamics for electronically signed e-Documents of the most popular e-Services offered by State Social Insurance Fund Board (SODRA) and Center of Registers (CR) and Public Procurement Office (PPO) from 2011 and 2012 (Table 2).

Table 2. Use of e-Signature and e-Documents

Name of the institution	Action taken	Number per 2011	Number per 2012
SODRA	Subjects that used e-Identification in the SODRA system	51.000	60.000
SODRA	Number of e-Docs signed using e-Identification in the SODRA system	4.560.000	4.980.000
CR	Subjects that used e-Identification in the CR system	1.309	7.748
CR	Number of e-Docs signed using e-Identification in the CR system	21.959	438.395
PPO	Number of offers signed in the PPO system	26.556	24.569

Source: Communications Regulatory Authority of the Republic of Lithuania (2013)

It should be noted that there are some success stories in the use of e-Identification solutions by the public administration in Lithuania. Some e-Services meet customers' needs and achieve high usage involving e-Identification technology. State Social Insurance Fund Board (SODRA) has a functioning system that ensures the possibility to receive and manage e-Documents. SODRA receives 0,5 million signed documents per month (Strumskis, 2012). According to the Report of the Ministry of Finance for the year 2012, 90 percent of income tax declarations and 95 percent of VAT tax declarations were submitted on-line.

Still, in Lithuania, the public sector sends about 5 million registered postal items, which requires about 5,5 million EUR for the postal services per year. The use of ICT that ensures electronic exchange between institutions and citizens can ensure direct savings and also would have a positive impact on environment by using less paper and leaving a smaller CO_2 footprint. There is another argument in favor of electronic exchange, as it takes only seconds to deliver a document via electronic means compared to a regular post (Information Society Development Committee). Also, in order to produce 5 million pages of copy paper, 42 pine trees of 30 cm in diameter are needed. It takes 17 years to grow a pine before it can be cut for paper[2]. Hypothetically speaking, if one postal item contains at least 4 paper pages (this is a pretty minimal estimate), that would be about 168 trees per year.

2 http://www.paperonweb.com/A1011.htm. Information used for approximate calculations.

Altogether, banks in Lithuania had 3.689.706 users of e-Banking system in the second quarter of 2013 compared to around 800.000 valid qualified electronic certificates (Association of Lithuanian Banks, 2013). It means that about 800.000 valid qualified certificates were issued and ready for the market by the end on 2012. Unfortunately, this number of state issued qualified electronic certificates to the large extent are not related to the access to online services.

Figure 1 below shows that most of the e-Identifications (1.132.746, or 91,6 percent) to access the e-Government gateway, which offered a variety of e-Services for citizens and businesses, serviced in Lithuania *via* e-Banking system in 2012 (Information Society Development Committee). E-Identification by other means to access the e-Government gateway was carried only 103.766 times (or 8,4 percent). There are some other very popular e-Services, such as income tax declarations and social insurance services. State Social Insurance Fund Board (SODRA) numbers somewhat differs (Figure 2). E-Banking solution is not the main e-Identification solution like in e-Government gateway, but in the case of SODRA, e-Services provided are only services of a single institution, not like in the case of e-Government gateway, which offers a variety of services for citizens and business from various state institutions. The SODRA's case is in a way unique, as SODRA has started to demand its clients to sign e-Documents with a qualified electronic certificate, as such e-Documents will serve as proof in order to calculate pensions and will be saved for the period of 75 years.

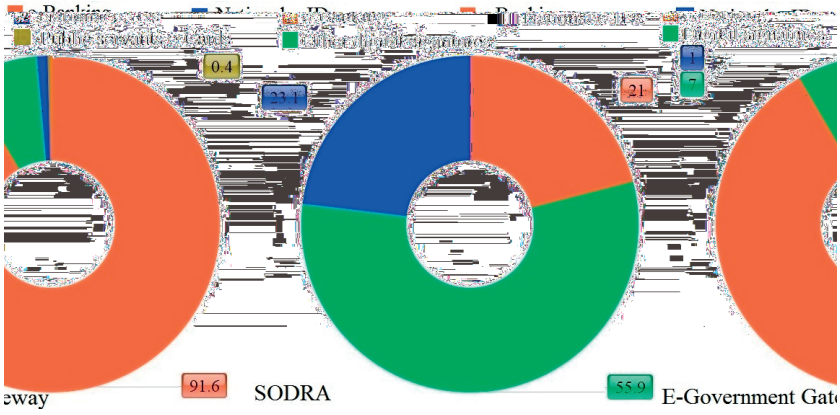

Figure 1. E-Identification solutions to connect to e-Government gateway in 2012[3]

Figure 2. SODRA. E-Identification solutions to connect to the SODRA system in 2012[4]

Another popular service in Lithuania is e-Tax and Value Added Tax (VAT) declaration, but unfortunately, State Tax Inspectorate does not collect the information

3 Data received by an e-mail query from Information Society Development Committee under the Ministry of Transport and Communications staff that runs the e-Government Gateway portal.

4 Data received by an e-mail query from SODRA's IT department.

on e-Identification forms that customers use to access in order to submit their tax and VAT declarations. Figure 3 below shows a number of citizens in Estonia (Martens, 2012), Latvia (Bokta, 2012) and Lithuania, a number of qualified certificates issued and a number of transactions per month. Numbers in Figure 3 show a low number (only 8.647) of transaction with qualified electronic certificate per month in Lithuania. These are the numbers indicating that the use of qualified electronic certificates are low and that the most popular public and private e-Services mainly are accessed *via* private e-Identification systems.

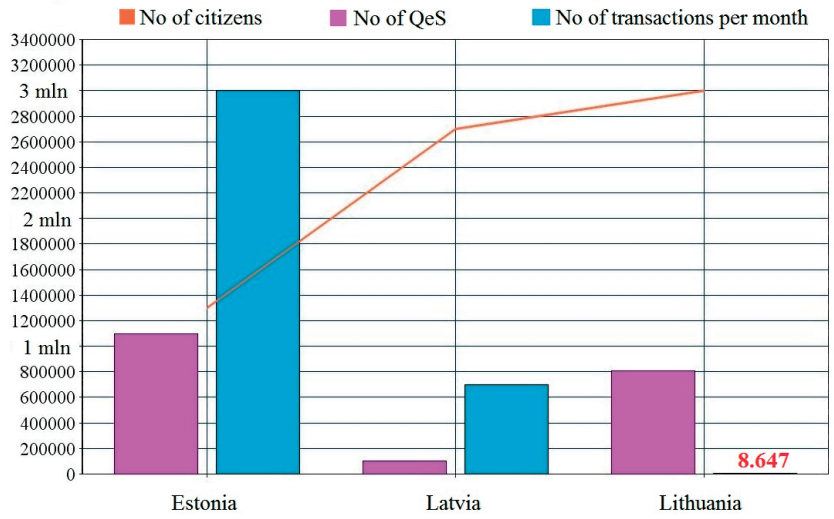

Figure 3. Use of qualified e-Certificates to access e-Services in Latvia, Estonia and Lithuania

From 2006, the intention of an Article 8 of e-Services Directive (2006/123/EC) has been to ensure that all procedures and formalities related to access to a service at a distance and by electronic means, through the relevant point of a single contact in the relevant competent authorities, are implemented in the EU Member States. Besides that, there is the requirement of public sector institutions to implement other measures that can positively influence the use of e-Identification solutions in the public sector. According to the Ministry of Interior Affairs (2010), the Ministry of Justice at the end of the year of 2010 started to put together an electronic system, which should allow to keep all documentation connected to the trial (from its start to the finish) in electronic form. The foreseen date, when systems should be operating, is November 2013.

In June 2013, e-Delivery system was introduced. The purpose of the system is that registered correspondence sent by state institutions can be received and sent online, meaning that electronic documents and notices intended to private and legal persons will

5 Figure composed from information taken from presentations of Martens (2012) and Bokta (2012) and data received by an e-mail query from the Information Society Development Committee under the Ministry of Transport and Communications staff that runs the e-Government Gateway portal.

be delivered using the single-window system. Public administration institutions can sign a contract in order to participate in the e-Delivery scheme. E-Delivery is not part of the e-Government gateway and so far it has had a very low number of public sector parties (only 109) users that participate in this scheme (Lithuanian Post, 2013). The exchange of e-Documents is only foreseen between persons/companies and governmental institutions, but it does not provide e-Exchange between government-to-government.

Provisions of the Law on Lawmaking prescribe that from 1st of January 2011 all adopted legal acts must be kept in the Information System of Legal Acts after they are signed by the secure electronic signature. After the e-Signature procedure, legal acts are stored in the register of the Legal acts and one copy must be safely kept according to the rules adopted by the signatory. Also, this procedure will be sufficient for all legal acts to become official. These provisions will allow not using hand signatures in the law making process. This is an opportunity to use e-Documents for the preparation stage to the adoption stage paperless, as it is already a legal requirement to upload prepared draft versions of the legal documents to the Information System of Legal Acts when they are submitted for comments. Information System of Legal Acts (http://www3.lrs.lt/dokpaieska/forma_e.htm) gives a number of 22.461 legal acts adopted in 2012.

There are a lot of parallel actions in the e-Identification area: a number of valid qualified certificates increase each year, but that is related to the obligatory legal provisions that every citizen, who receives an updated national electronic identification card, receives it with a qualified certificate. At the moment, a number of valid qualified certificates (national e-ID cards and civil servant cards) is growing, but there are only a few successful examples of e-Services provision. The most popular ones are based on private e-Identification solutions. Also, according to the Report for the year 2012 on the implementation of the Electronic Signature Law of the Republic of Lithuania (Communications Regulatory Authority, 2013), only 13 percent (out of 3500 surveyed) of the public sector institutions will be capable to perform the exchange of e-Documents by the 1st of January 2014.

4. Research methodology

Application of e-Identification solutions allows forming lean management of the public sector – increases accountability, transparency and reduces time needed to perform duties (collect/share/use of information). Looking from the clients' perspective, e-Identification technology adds value to the management performed by the government. The most crucial factor for the use of e-Identification technology solutions is the ability to manage the technology in the organization in order to achieve desired results. Therefore, this research attempts to validate the concept of preparation of the organizational capability model for e-Identification measures in the public sector of Lithuania.

Application of content analysis method allows looking at the application of e-Identification solutions from the perspective of organizational capabilities in the public

sector of Lithuania. Data and information presented show that the area that requires attention in the e-Identification technology solution implementation in the public sector in Lithuania is the organizational capabilities of technology management.

Additionally, pilot research was carried in order to correct the guidelines of the qualitative research. The pilot research was carried out on the basis of the toolkit for the development of dynamic capabilities for e-Government interoperability developed by the USA researchers Cresswell *et al*. (2005, 2008) and applied by Malinauskienė (2010) for e-Government interoperability matters in Lithuania. Toolkit offers criteria and methodology for the evaluation on organizational capabilities, but it orders to apply the toolkit methodology for the issues of organizational capabilities to infuse e-Identification solutions, it will have to be modified not only on the organizational, but also on the national level of strategic planning and coordination. During the pilot research, *information on* specificities *of organization capabilities to* implement e-Identification solutions in the public sector was gathered, analyzed and interlinked with content analysis *via* comparative and deductive methods.

5. Pilot research and findings

The pilot research was carried out in order to correct the guidelines to the qualitative research. The pilot research was used to acquire information on the use of e-Identification measures and organizational capabilities in the ministries and governmental departments. The aim of the research is to undertake major research that will support construction and validation of the model for e-Identification in the public sector of Lithuania.

The main questions of the pilot research were on the main areas of the organizational capabilities:

- Technology aspects. Mainly, what e-Identification technology solutions and equipment public sector institution in Lithuania use.
- Organizational aspects. The leading questions were on the use of e-Identification solutions for G2E, G2C, G2B, G2G; what encouraged the use of e-Identification solutions by the institutions; which part of documents were replaced by e-documents; questions on the impact of such technology were asked, etc.
- Skills. Questions, such as whether public servants had training to use e-Identification solutions (because in the public sector such solutions would be integrated with document management systems); what are the views of the staff on the technology used by the institution.

Different answers of the pilot research are summarized in Table 3 and comments are provided below.

Table 3. Summary of the answers gathered during the pilot research

Issue	Variety of answers	Variety of answers	Variety of answers
Use of e-Identification solutions in public service institutions	Yes. Other forms of e-Identification are not used		
Equipment in PSI	Yes		
Use of e-Identification solutions for G2E	Yes	Only for internal documents	No
Use of e-Identification solutions for G2C/B	Yes, ADOC		
Use of e-Identification solutions for G2G	Ready, but no practice	Not ready, no document management system	
Basis for implementation of e-Document management systems with e-Identification platform	ICT policy related functions	Guidance from top management	Because of legal requirements[6]
Public servants skills to use e-Identification solutions	No problem (real life learning + specialized courses)		
Number of e-Docs	Major	Very minor	No storage facility
Skills/equipment of citizens	Yes		

Source: Composed by the authors

Ministries and governmental departments mostly fall under the category of 13 percent that are already using electronic document management systems with platform for qualified electronic signature. More simple and less costly technology solutions for closed systems of e-Identification are not used by the ministries and governmental departments even for G2E communications. The main reason for it is that the use of Public Key Infrastructure is required by the EU law (e-Signature Directive (1999/93)) for the provision of e-Services. Also, simple and less costly e-Identification solutions for closed systems are not used, as they would duplicate e-Identification measures based on qualified electronic signatures.

The stronger the connection of the public sector institution to ICT issues (such as policy formation), the more it is motivated and obliged (even for moral reasons) to use e-Identification solutions and sooner. Institutions that do not have electronic document management systems ensure just a minimum of what is required by the Law on Public Administrations. Article 23.2 of the Law on Public Administration prescribes that public service institutions must be capable to receive and reply to electronic queries.

6 Article 23.2 of the Law on Public Administration foresees that public service institutions must be capable to receive and reply to e-queries.

Those public service institutions that have electronic document management system with qualified electronic certificate platform do not carry G2G exchange. One reason is that no formal obligation is set for G2G electronic communication, but another reason is that if institution has a possibility to carry the exchange of e-Documents, it is not clear which public service institutions (out of 13 percent) are capable to receive e-Documents.

State Social Insurance Fund Board (SODRA) has started to demand its clients to sign a certain type of e-Document forms with a qualified electronic certificate. The reason for that is that social insurance documents will serve as a proof to calculate pensions and will be saved for 75 years (SODRA, 2012).

Promotion of e-Documents standards is necessary on national and cross-border levels. In Lithuania, the adoption of ADOC standard for the public sector by the Chief Archivist of Lithuania (by the end of 2009) allows public sector institutions to develop document management systems that can ensure effective electronic communications between the public sector institutions. This standard is used by the public sector, but in the case public sector institution would receive e-Documents of other standards from constituency, there might be cases where document management systems used by the public service institutions will not be able to read some files extensions of e-Documents.

According to the representatives of public service institutions, low use of qualified electronic certificates issued by the state to the citizens is influenced by the lack of card readers and general information. On the other hand, ministries and governmental departments are not receiving too many queries from the citizens or businesses. Thus, education of the citizens about the capabilities of national e-Identification card and provision of card readers would be crucial to increase the number of cases when they would turn to the public sector. The Estonian case shows that all national e-Identification cards were provided along with the readers that instantly increased the curiosity and the use of those cards for e-Services provided by the public and private sectors.

E-Document management systems are too costly for small size public institutions, as individual e-Document management system with e-Identification possibility can cost up to several hundred thousand of EUR. E-Document management systems with e-Identification platform on the cloud can help small size public institutions that have different size budget (than those in the ministries or governmental departments) to have a possibility to use and manage e-Documents.

6. Conclusions

Private e-Identification systems and private e-Identification solutions are still mostly used to access public e-Services by citizens in Lithuania. Use of e-Identification cards with qualified certificates that are issued by the state institutions to the citizens or civil servants are not popular. Time has proven that provision of public e-Services cannot rely on private sector closed e-Identification solution systems (mostly e-Banking). Such practice overloads and burdens the business sector. Thus, the analysis showed that neighboring countries managed to achieve a much effective use of qualified certificates that are issued by the state institutions to the citizens to access public e-Services that are provided by the public and private sectors.

Also, the analysis showed that even ministerial level institutions and governmental departments use e-Document management systems that allow the use of qualified electronic certificate. Nonetheless, there is a gap on the level of government-to-government communication. Adoption of ADOC standard for the public sector by the Chief Archivist of Lithuania (by the end of 2009) allows the public sector to develop document management systems that can ensure effective electronic communications between the public sector institutions even without legal obligatory provisions.

The content analysis allowed evaluating relation and effect between ICT and organizational capabilities. The pilot research showed the need for deeper research on management models for organizational capabilities in the public sector of Lithuania. Further development of national e-Identification solutions would influence cross-border electronic relation goals of the European Union. That would also encourage citizens to get involved with government institutions using electronic means. Therefore, management recommendations based on scientific research are needed to improve organizational capabilities in the public sector of Lithuania. Further work will be carried out in this area. The main intention in the near future is to prepare and validate organization capabilities model for e-Identification measures implemented by the public sector in Lithuania.

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ELEKTRONINIŲ ATPAŽINTIES PRIEMONIŲ VIEŠAJAME LIETUVOS SEKTORIUJE PLĖTRA: POKYČIO GALIMYBIŲ ANALIZĖ

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Santrauka. *Straipsnyje nagrinėjamos e. atpažinties priemonės, analizuojama ir vertinama, kokie pokyčiai turėtų įtakos efektyvių e. atpažinties technologijos sprendimų diegimui Lietuvos viešajame sektoriuje, susiejant juos su institucijų organizaciniais gebėjimais. Siekiama pagrįsti organizacinių gebėjimų modelio rengimą, kuris leistų efektyviau išnaudoti e. atpažinties technologijų sprendimus Lietuvos viešajame sektoriuje.*

Turinio analizė atskleidė, kad e. paslaugų direktyvos (2006/123/EB) nuostatos dėl e. paslaugų teikimo piliečiams, naudojant vieną langelį, įgyvendinimas užtikrina tik kai kurių (Sodros, turto ir mokesčių deklaracijų) e. paslaugų sėkmingą plėtrą ir naudojimą. Nors piliečiams yra išduotos nacionalinės identifikavimo kortelės tam, kad pasinaudotų viešojo ir privataus sektorių teikiamomis e. paslaugomis, tačiau piliečiai dažniausiai naudojasi privačiais e. atpažinties sprendimais (e. bankininkyste). Dėl to verslo sektorius Lietuvoje patiria papildomą finansinę naštą, nors praktika kaimyninėse šalyse (Estijoje, Latvijoje) rodo, kad viešojo sektoriaus piliečiams išduoti kvalifikuoti sertifikatai gali būti aktyviai naudojami prieigai prie e. paslaugų.

Nors dalis viešojo sektoriaus įstaigų naudoja modernias e. dokumentų valdymo sistemas ir pradeda naudoti e. parašą vidaus ir (ar) siunčiamiems elektroniniams dokumentams pa-

sirašyti, tačiau Lietuvos vyriausiojo archyvaro tarnybos duomenimis, tik 13 proc. (iš 3500 apklaustų) viešojo sektoriaus įstaigų nuo 2014 m. sausio 1 d. pasirengusios keistis e. dokumentais. Kol kas viešajame sektoriuje nėra žinoma, kurios įstaigos turi e. dokumentų valdymo sistemas, kurios ne. Be to, gavusios rečiau naudojamų e. dokumentų formatus viešojo sektoriaus institucijos negalėtų atsakyti piliečiams dėl 2009 m. Vyriausiojo Lietuvos archyvaro patvirtino ADOC e. dokumento standarto naudojimo Lietuvos viešojo administravimo sektoriuje.

Pilotinio tyrimo metu gauta informacija iš ministerijų ir Vyriausybės departamentų apie e. atpažinties sprendimų naudojimą prieigai prie e. paslaugų, kurias teikia viešasis ir privatus sektorius. Pagrindiniai pilotinio tyrimo klausimai užduoti ministerijų ir departamentų atstovams apie organizacinius gebėjimus naudoti, diegti ir įgyvendinti e. atpažinties technologijų sprendimus, t. y. kokios e. atpažinties technologijos ir įranga naudojamos, kokiais lygiais bendradarbiavimą užtikrina pasirinktos e. atpažinties technologijos (G2E, G2C, G2B, G2G), ar viešojo sektoriaus atstovai turi pakankamai įgūdžių naudotis e. atpažinties technologijomis ir pan.

Nors ministerijos ir Vyriausybės departamentai turi ir naudoja e. dokumento valdymo sistemas su integruotais e. atpažinties sprendimais, tam, kad būtų efektyviai išnaudojama e. atpažinties technologija, būtina tobulinti viešojo sektoriaus institucijų administracinius gebėjimus. Taip būtų įtakojami efektyvūs procesai, užtikrinantys automatizavimą, laiko taupymą ir taip užtikrintų pridėtinę e. valdžios vertę. Tik turint patikimas, veikiančias ir naudojamas e. atpažinties technologijas nacionaliniu lygiu, bus galima užtikrinti ES tikslą dėl tarpvalstybinių e. paslaugų teikimo. Todėl vadybinės rekomendacijos, pagrįstos moksliniais tyrimais, yra būtinos, kad būtų galima tobulinti Lietuvos viešojo sektoriaus gebėjimus diegti e. atpažinties sprendimus. Bus siekiama parengti organizacinių gebėjimų modelį e. atpažinties sprendimų įgyvendinimui Lietuvos viešajame sektoriuje ir pagrįsti jo tinkamumą.

***Raktiniai žodžiai*:** *e. atpažintis, technologijų valdyba, organizaciniai gebėjimai, e. valdžia.*