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E-GOVERNANCE IN PROVIDING PUBLIC SERVICES IN ESTONIA: A CASE STUDY

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In current public administration, technology and internet solutions are playing a more important role in increasing efficiency and reducing costs. This article's aim is explaining and analysing the Estonian model of e-governance providing services to citizens via different electronic solutions. The example of the Estonian Road Administration bureau is used to illustrate the possible ways of improving public service accessibility and making the service faster and accessible from different parts of the country without a need to appear in person in the office. First the development of Estonian e-service is described and analysed, the different stages of development are discussed and theoretical aspects are evaluated. The research results led to the conclusion that the success of the public service does not depend only on the proposed solutions, but also on the availability of information to the potential users - the citizens. The e-service has to be easily accessible, useful to the user and easy to use, if these elements are already envisaged in the development stage the service can also achieve the other objectives – efficiency and cost benefits.

Keywords: e-governance, Estonia, public service modernization, Estonian Road Administration, e-service

1. INTRODUCTION

Estonia is famous for having successful e-government solutions. Estonian e-services get positive feedback from the whole world. In addition, Estonia is among the leading Information and Communication Technology countries in the European Union (Kalvet, 2012, p. 2). Technology is changing rapidly in the whole

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world, which means services have to be adapted quickly and their implementation also has to be speedy. Users' expectations are changing, and users want to get more useful services in today's world that is full of technology. Technology does not change users' behaviour every day, but it does have a long-term effect on customers' needs and actions. Changes in the technological world take place around five to seven years (Simson, 2016). Today's users do not wait for different e-service functionalities, because functionalities are a hygiene factor for them. Users only want a few simple things from a perfect e-service. The e-service has to be quick and should not consume much time. For this reason, e-services have to be extremely easy to use. At the moment, the majority of services, including state provided services, are used traditionally. For instance, going into the Estonian Road Administration (ERA) bureau will take approximately three hours of a customer's time (driving into bureau plus service delivery). While using the e-services of the ERA, the time for the user will decrease dramatically. Moreover, if a service provider of the public sector creates an online version of a service, it can decrease the working time of the public official and save administrative costs. Overall, this will decrease public sector spending in the long run. Public sector officials can use time more efficiently and offer better services.

Employment in the public sector plays an important role in Estonia's economy. Estonia has an aging society and a declining workforce, which puts the country in a difficult position (Sarapuu, 2014). A small state has to provide effective services to meet the citizens' requirements, at the same level as big countries do (ibid.). This leads to a paradox, where on one hand, the state should be thinner and the bureaucracy should be decreased, but on the other hand, all services have to be delivered to the citizens effectively. One of the solutions for this problem is to develop e-services and decrease the workload of public institution bureaus and offices. Nevertheless, even if a state has the necessary infrastructure for developing e-services, how can a public institution be sure that citizens will start using new e-services, instead of visiting the public institution's offices, to which they are already accustomed to. A trigger has to be found for citizens to use the new e-services. One of the triggers can be good marketing of the service, which informs citizens about new technologies and possibilities.

This present article about the e-governance is illustrated with the Estonian Road Administration's case study, which offers an overview of how the ERA developed their e-services, informed citizens and increased the e-service usage percentage from all of the ERA's services.

"The Estonian Road Administration (ERA) is a government agency operating within the administrative area of the Ministry of Economic Affairs and Communications. On the basis and to the extent prescribed by law, the ERA performs the implementation of state policy and development programmes, management functions, state supervision, and applies the enforcement powers of the state in the field of road management, traffic safety, public transport and the environmental safety of vehicles" (Estonian Road Administration, 2013).

All necessary information is based on the ERA's case study, which includes ERA's statistics and available information. The aim of this article is to find out if there is a correlation between public sector e-service marketing, growth in the usage of e-services and the decrement in the number of visits to the ERA's offices. In addition, it gives an overview of Estonia's experience in the e-service development field. Moreover, the ERA's functionalities, history and developments will be described.

To get a better understanding of the phenomenon of e-services and their success, it is necessary to identify what e-service means. Furthermore, if the government would like to suggest to citizens to use the new e-services, instead of going to public offices or bureaus, then how should citizens know about the new solutions? In addition, this paper will take a closer look into theoretical concepts, such as the socio-technical system approach, which helps to understand the interaction between people and technology. Moreover, the e-service concept will be characterized.

The concept of 'e-service' consists of two parts: the "e-" and the "service". The "e" stands for something done electronically. The "service" characterizes a process in which extra value is created for the user. In addition, the stages of e-governmental services will be compared with ERA's e-service development. Furthermore, the service design approach and its necessity will be explained. Last but not least, service marketing is viewed through the service dominant logic approach.

This current research will be a case study, based on ERA's information, of how it is possible to increase e-service usage, while decreasing administrative costs. The ERA's case study provides a valuable viewpoint, which can be interpreted into other public institutions' or countries' context, whose aim is to develop their e-services and to promote them among citizens.

How to decrease public sector spending through the increment of e-service usage by implementing marketing in e-governance?

The public sector marketing activities influence the ERA's e-service usage percentage positively and, as a result, the bureaus' visits decrease.

2. THE DEVELOPMENT OF E-SERVICES IN ESTONIA

Since the early 90's internet usage has grown rapidly in Estonia, after regaining Independence from the Soviet Union. From there, Estonia has come a long way and is currently in the front row of e-service development (Kalvet, Tiits, Hinsberg, 2013, p. 13; Anthes, 2015, p. 18; Kitsing, 2011, p. 1). Estonia is described as an e-service country. Although many other countries have been active and figure in the front row, Estonia has caught the reputation as a successful e-service developer (Anthes, 2015, p. 18; Kitsing, 2011, p. 1; Kitsing, 2008, p. 429) The public sector

has created a vision, which is to offer fast e-services with good quality. The involvement of strategic foreign investors, Estonian fixed communication networks and the liberalization of the Estonian telecommunications market, were perhaps the most important steps that Estonia made, which gave it strong fundamentals for the progress of an information society (Kalvet, 2007, p. 11; Kitsing, 2011, p. 1). In addition, the leading politicians supported some initiatives within the government, because their goal was to develop a "thin" (minimal and efficient) state (Kitsing, 2008, p. 430). This means developing e-services needs political support.

The biggest challenge was to develop Estonian state information systems, which could make e-service provision possible. To benefit from the usage of ICT, requires major changes in public sector institutions' workflows and communications. It needs cooperation between different information systems and various organizations (Kitsing, 2011, p. 8; Kalvet, 2007). For example, the emergence of X-road or ID-card formed the foundation for all future e-service developments. Moreover, e-service development was possible in Estonia, because of free and open Internet access. Information society is mostly characterized by the development of Internet usage, which has grown rapidly over the years. For instance, in 2007, the Internet in Estonia was used by 65% of 6–74 year-old citizens, which was above the European average (Kalvet, 2007).

Many studies have shown that Estonia has significantly decreased public sector service time and financial spending by using e-services, although the investment cost of the development phase is yet unclear (Kalvet, Tiits, Hinsberg, 2013, p. 7). Nevertheless, time is one of the key factors that can be saved by implementing e-services.

Institutions, which develop Estonian information systems, concentrate mostly on the user and services with an aim to link information systems and services into one logical system to provide e-services for citizens, institutions and organizations (Ministry of Economic Affairs and Communications 2016). This one logical system is called X-Road, which is a data exchange layer. The state and local government organizations, the third sector, private companies and citizens use it. X-Road allows e-services to function and work together (Information System Authority 2016).

According to the Information System Authority, there are five different characteristics, which a successful e-service has to cover. First, an e-service has to have sufficient technical interoperability, which means information systems integration has to be a top priority task for e-governance. Furthermore, system security has to be protected. In addition, an e-service has to be available for open standards that determine the feasibility of the investments.

The world is changing rapidly, which makes flexibility a vital factor in innovation and in the ICT sector. Flexibility is a key factor in the sustainability and success of the information system development. Finally, the system has to meet user's satisfaction and needs. Statistics can change quickly, which means scaling has an important role for guaranteeing the effectiveness of the IT solution (Ministry of Economic Affairs and Communications 2016). Statistics are generated from open

data. The public sector gathers and stores it (economic, environmental, statistical, spatial information, etc.).

Open data has moved largely to digital form, which has to be machine readable to get the most out of it. The openness of the data will contribute to the transparency of governance, innovation and an economy boost. It will allow the public and private sectors to combine data and create new services to bring benefit (ibid.).

3. THE CONCEPT OF E-SERVICES AND THEIR POPULARITY IN ESTONIA

Many research papers currently cover e-service, e-government or information system areas. It is not a revelation, as it is one of the public fields which has grown rapidly over the recent years. Many identical names have been used to characterize e-services, for example e-government service, public e-service, electronic service, digital service, etc. That is why it is important to describe the concept of an e-service, not to mix it up with other synonyms. Only, the 'public e-service' concept has not been discussed much in scholastic articles.

The discrepancy between a service and an e-service is that a service is a process, where someone is served and some extra value is created. Moreover, an e-service is mediated electronically, through the use of information technology (Lindgren, Jansson, 2013).

In many researches, e-service is defined as an effort or performance that has been delivered to users by information technology (ibid.). In some literature, e-service is "...an interactive, content-centred and the Internet-based customer service, driven by the customer and integrated with related organizational customer support processes and technologies with the goal of strengthening the customer–service provider relationship" (ibid.). Usually it refers to an electronic or Internet based technology, for example a web page. Some argue that SMS and mobile applications are also e-services. Moreover, Scupola, Henten, Nicolajsen (2009) argue, that there is no clear dividing line between services and goods. They claim that e-services have characteristics in common with goods as well as services; therefore, e-services are situated between goods and services. Furthermore, the main arguments and characteristics of an e-service are that it can be perceived as a technical artefact which is mainly Internet-based, involving interaction and connection with other information systems (for example X-road). E-service is accessible and usable for its target group (Lindgren, Jansson, 2013, p. 167).

Some authors describe e-service really clearly and simply: e-service is an online version of a service. Information systems are important components in public administration. Their main function is to automate many manual routines, for example, a civil servant has to write down data repeatedly, although the data is already

known. In addition, e-services provide a communication tunnel between public administration and a citizen. Citizens can interact via different e-channels, for example e-mail, online helpline, online voting, etc., instead of going directly to the office, calling the office or sending post (Holgersson, Karlsson, 2014, p. 396). Automating the systems and using e-services can increase the efficiency of governmental authorities by decreasing many routines that are done manually. This also creates more transparency in governmental work. However, developing new information systems can be expensive, but decreasing the work force can reduce costs and time – and also, make officials' and citizens' usage of a service more comfortable (ibid.). The development of an e-service depends on many aspects – internal and external stakeholders, finance, economy, businesses, but most importantly – citizens. Citizens have the power to give insight whether the e-service is important or not. Moreover, the knowledge which can be analysed from citizens' skills and needs (what they really need), has to be first in line, because if their behaviour is observed, it can bring success in e-service development (ibid.).

Estonia is a role model of a successful e-government (Anthes, 2015, p. 18). E-government refers to a government that uses technology and information systems, especially Internet based applications, to deliver information and services to citizens and other stakeholders. It is believed that e-government can build better relationships between the public (citizens, private sector, partners, etc.) and the government – more efficient, easier and faster communication (Layne, Lee, 2001, p. 123). E-government services' promotion in Estonia started in the beginning of 2000, when Estonia launched its electronic tax-filing service. Two years later, in 2002, the first electronically readable ID cards were introduced, which gave universal access to governmental information and services provided by government and private entities (Anthes, 2015, p. 18). From that time, Estonia has invested a lot to develop e-services and to bring more functions online, especially to have a connection with the nationwide X-Road, which can be called the Estonian data backbone, through which different services are orchestrated (ibid.). The goal of Estonia's e-service development is to provide fast services with the smallest amount of administrative burden as possible (Kalvet, Tiits, Hinsberg, 2013, p. 9). In 2015, the Estonian government offered around 600 e-services to citizens and approximately 2400 for businesses (Anthes, 2015, p. 18). Although most Estonians cannot name all the available e-services, they can name some of them. Ten years ago, in a 2007 survey, 57% of 15–74 years old Estonians could not name any e-service that was provided by the public sector. 42% of Estonians who are Internet users could not name any e-services. 28% of Internet users could name independently e-taxation and tax declaration (TNS Emor, 2007). Knowledge about e-services has increased rapidly. In 2010, TNS Emor measured again the knowledge of e-services. Around 41% of the target group could not point out independently any public e-service. Citizens who could not name any public e-service were mostly from the southern or northern parts of Estonia, were around 50–74 years old, non-Estonians, with lower education and income rate and mostly retired. Only 29% of Estonians, who

use Internet daily, could not name any public e-service. 63% of Estonians had used at least one public e-service (TNS Emor, 2010, p. 14). In 2013 80% of the respondents of the survey claimed that 12 of 15 e-services had made public service usage easier. Again, tax declaration was the most well-known e-service (Kalvet, Tiits, Hinsberg, 2013, p. 9). It is essential to make e-services more intuitive, proactive and simple, in order to encourage citizens to use them and increase their impact.

Despite it being possible to copy some Estonian e-services (except e-voting, ID card functionality and X-road), e-service export has not been successful (Kalvet, Tiits, Hinsberg, 2013, p. 8). There is a possibility to export e-government solutions if they are presented to the international community, but generally, existing IT solution export in the same form as it is used in Estonia has failed (ibid.). Estonia has managed to save remarkable amounts of time and money by updating and developing e-services. However, many e-service providers have not analysed the effectiveness and the amount of time and resources spent on development, which makes cost-benefit analyses complicated and inaccurate.

To conclude, 'public e-service' means in almost every literature that e-service is supplied by a public sector organization (Lindgren, Jansson, 2013, p. 168). Although, the term 'public' does not always mean public sector or governmental agencies – it can also refer to availability for public usage (ibid.). Many private e-services are available to the public, for example financing or banking e-services. In this research, the author uses the 'public' prefix as a term that illustrates public organizations, which are formal public entities that organize public administration (e.g., ministries, municipalities, regional authorities, and state authorities). Moreover, 'public service' in this research context can be defined as a service that is provided by public organizations for citizens (ibid.).

By using e-services, the time for the user will decrease rapidly. If a public sector organization could create an online version of a service, it could decrease the working time of a public official and save administrative costs. For instance, registration for the first driving license can take 10 minutes of a public official's time. Using an e-service can save almost 308 000 minutes of officials' time per year (Simson, 2014, p. 96). This equals around 32 months of work. This will decrease public sector spending in the long run. Every service used on an e-service platform decreases clients' needs to visit bureaus in person. Public sector officials can use time more efficiently and offer better services, instead of providing services that can be already done by users themselves via Internet.

4. STAGES OF E-GOVERNMENTAL SERVICES

E-government is a derivative phenomenon and e-government initiatives should be derived and enforced. Layne and Lee in their research propose a four stage growth model for e-government. The e-government four stage growth model con-

sists of cataloguing, transaction, vertical integration and horizontal integration (Layne, Lee, 2001, p. 124). In the first phase, the state government is focused on creating an online presence for the government, for instance web development. At the end of this phase, the government starts to establish index pages for citizens to look up information or necessary downloadable information forms. Efforts in this phase are focused on cataloguing information to the web (ibid., p. 125). The Estonian Road Administration has updated its website from 2010, where they added sections which inform citizens about traffic laws, etc. In addition, the ERA added some help materials to their updated website. This extra value decreased lines at the bureaus and the information call centre (Estonian Road Administration, 2013).

The transaction phase focuses on connecting the internal governmental systems with online interfaces, which allows citizens to interact or transact with the government electronically, via online (Layne, Lee, 2001, p. 124). In this phase, the government puts live database links to online interfaces, so citizens can pay fines or exchange their driving license online. In the ideal model, web transactions are posted directly to the functioning governmental systems and have minimum interaction with governmental staff members. While all the data is linked to each other at different governmental levels, citizens will see government as one integrated information base (ibid.). It would be like a 'one stop shop' for citizens.

The Estonian Road Administration is an example of a public service that provides many e-services, where citizens can interact with the government electronically, for instance when exchanging a driving license, for technical inspections of vehicles, transferring vehicle ownership, applying for a driving license, etc.

This kind of connection between government and citizen can be realized in two ways: vertical and horizontal. Vertical integration means local, federal and state governmental organizations are connected for different governmental services or functions (ibid.). For instance, the driving license registration system in the Estonian Road Administration is linked to a state database, to give a full overview of the citizen. Horizontal integration can be characterized as integration across different services and functions. Those functions are available in separate systems, but the goal is to provide citizens with a unified service (ibid.). For example, a citizen can get his driving license wherever he wants or via post, because all Estonian Road Administration database systems are connected with each other, despite their location.

There has also been developed a five-stage model, which captures the whole e-government vision. The new e-government model includes the web manifestation, interaction, transaction, transformation and e-democracy stages (Siau, Long, 2005). The model is simple and has similar main ideas to those Lyane and Lee had in their four-stage model.

The web manifestation phase is the most basic form of electronic government. The government adds basic information on their websites, like contact information, news, office hours, organization mission and vision (ibid.). There is more information and it is more dynamic and often has updates just as Layne and Lee's first

stage (catalogue). Also, the ERA's web page is updated and the most important information that a citizen might need is available on the web.

The interaction phase provides an interaction between citizens and government, for example through e-mails, downloadable forms, etc.

The third phase is the transaction stage, where citizens can interact via online transactions. This stage is similar to Layne and Lee's transaction stage, although it has more modern characteristics and is concentrated not only on businesses but in addition also on citizens (ibid.). The ERA has all the characteristics which describe the interaction stage.

The fourth stage, the transformation stage, explains the way the public sector provides services (ibid.). The transformation phase includes both vertical and horizontal integration (governmental organizations at different levels and governmental organizations or departments in different locations). To reach this goal, governments have to re-engineer their existing services and processes by decreasing bottlenecks and stakeholders (ibid.). The technical solution X-road has made the integration between vertical and horizontal levels possible.

The last stage is the e-democracy phase, which is one of the main goals of e-government development. This can be developed with tools such as online voting, surveys, citizens' involvement, political participations, etc. The ERA involves citizens by giving new and updated information about their areas of expertise and creating a safe traffic environment. Citizens can give feedback electronically, which is taken into consideration by the ERA.

5. THEORETICAL ASPECTS

The first theoretical approach used in this research is the socio-technical approach. The socio-technical concept studies the interaction between technology and people. As this concept claims that social and technical factors depend on one another, it was important to use this approach to analyse the case of the ERA. The analysis shows that technological and social factors play an important role in the usage of e-services or visiting the bureaus. If e-services are user-friendly, easy to use and make life more comfortable, then the technical factors in e-services are adopted quicker. Still, not all e-services are used so much as others. The answer is not clear whether the complexity of the particular e-service process or something else influences the usage of the service.

However, the steps describing how to use the e-service are described in very detailed tutorial videos. In addition, the staff of the office is trained to teach citizens how the services can be used online. For some citizens, the usage of technology might not be as obvious as it is for a large number of Estonians. For this reason, additional guidance should be provided for the specific e-services that are not used

as often as the others, in order to make e-service usage easier. Secondly, the terms 'service' and 'e-service' are explained, in order to understand what the ERA's e-services mean and what are their goals. The e-service concept can be described from two perspectives – the electronic and service perspective. The ERA's e-services are electronic, which means they are produced and controlled by information technology and as they are services, they can be characterized as a dynamic process, which creates an extra value for the user. Another perspective divides e-services by their availability and ownership. Services can be public or private. The ERA's e-services are available for all citizens and owned by the Estonian Road Administration, which is managed by the Ministry of Economic Affairs and Communication. Moreover, e-services must be simple in terms of language, design, technical capabilities and in terms of the structural logic of their functionalities.

Two e-government stage models are compared. First and foremost, the four stage growth model, as the name suggests, consists of four cycles. The five-stage growth model in contrast has similar cycles, but is more innovative. Both models were suitable to analyse the ERA, although the last one turned out to be more suitable for the case study of the ERA, as it is novel and more similar to the ERA's development process. The approach of e-government service stages is necessary for this research, because it divides services into phases and gives a brief overview to that specific public organisation to see where they stand and to act according to where they want to be. The ERA has developed all five stages. This approach showed that the ERA stands at the leading position in e-governmental services.

Service design theory gives an overview of how to build an effective e-service. What would be the brief steps needed in order to have successful e-services? When designing a service, service designers should communicate with all stakeholders (governmental officials, customers, employees) to understand their ways of thinking and their ideas on what an ideal service experience would look like (Shuman, 2014). In the ERA's case, there was a clear need for developing e-services. The Estonian Road Administration was interested in changing their service. The organization was ready and the majority of the citizens was also ready to start using the e-services. The ERA's management supported clearly the development of its e-services (Simson, 2014, p. 25). When starting to develop a new e-service, it is necessary to follow basic steps, which result in a good e-service. It is extremely important to know the logic of the environmental information architecture – the way information and its structure has been built, connected to other structures and made available to the customer. Public sector e-services have to follow strict rules and standards regarding usability, navigation and design. For instance, the Estonian public sector uses WCAG2.03 AA framework, which requires using already existing and properly working web solutions. The ERA is a good example of a public organization, which uses a standardized login and other specific architecture frameworks (Simson, 2014). To sum up, the service design approach gives an overview how services should be conducted in order to be successful among users.

Last but not least, the service dominant logic approach was used, which highlighted the value created by the customer. This means, the service should be developed together with the end-user, in order to meet customers' requirements. The ERA's case study shows that they have used a user centric approach while offering services, which would create an extra value for the user. All of the ERA's e-services were not launched at the same time. From the perspective of the service dominant logic approach, it was the right decision not to launch them all at the same time, because different services take time to be fully developed before they can be opened to the end-user. The ERA did not launch any pending e-services, they launched full versions, which were tested before. Moreover, the service dominant approach was described as a "marketing-with" approach. It means the customer is an active participant and the value is created for the end user. In the marketing perspective, it means the ERA's marketing communication included one important trigger, which was a less expensive state fee. When a citizen uses the ERA's e-services, the state fee is 20% less expensive. This was a good communication decision, because it created an extra value for the end-user.

6. CONCLUSION

First, a small correlation could be seen between the change in e-service usage and the change in office visits. This means that if e-service usage changes rapidly, then the visits to the ERA's bureaus also change rapidly. Furthermore, e-service usage grows monthly. The average increase in the usage of e-services per month is 1.4%. It is not a rapid increase, but it is quite strong, which means the ERA is doing well in promoting their e-services. In addition, visits to the ERA's offices are decreasing by 1.03% per month. For instance, the ERA's office visitors decreased by 12% within one year (2015). Answering the first sub-question, the correlation between e-service usage and visits to the bureaus is quite strong. If e-service usage increases by 1% per month, the ERA's office visitor number decreases by 572 clients per month. Answering the third sub-question, this means using e-services could decrease public sector spending and the offices' workforce. For instance, registration for a first driving license can take 10 minutes of a public official's time. Using an e-service can save almost 308 000 minutes of an official's time per year (Simson, 2014, p. 96). This equals around 32 months of work. This will decrease public sector spending in the long run.

The second sub-question, how do public sector marketing activities influence e-service usage in the ERA's case can be answered by the following: almost all of the ERA's e-services, which were analysed in the previous data analysis section (driving license exchange, ownership transfer, driving instructor licenses, applying for an instructor's certificate, temporary removal from register, registration for

driving and theory exam) had a strong connection with marketing and press activities. It was clear e-service marketing plays an important role when developing a successful e-service. Marketing helps to inform citizens about new solutions, which makes their lives easier and, in turn, decreases the workflow in the bureaus.

The analysis showed it is important to implement marketing in the public sector and in e-governance. Marketing e-services helps to increase the e-service usage percentage from all services and, in turn, decreases public sector spending in the long run. This current research provides one main hypothesis, which is proven by the answers to the research questions. The public sector marketing activities influence the ERA's e-service usage percentage growth positively and as a result, the bureaus' visits decrease. The public sector marketing activities influence the ERA's e-service usage positively. Moreover, if e-service usage increases by 1% per month, the ERA's office visitor number decreases by 572 clients per month.

This current research on how to decrease public sector spending through the increment of e-service usage by implementing marketing in e-governance, with the example of the Road Administration case study, gives an overview of the important steps, which support the main argument and research questions. A small state, like Estonia, has to provide effective services, but at the same time, the workforce is declining. It has led to the paradox that a state should be thinner, but at the same time, all services should be delivered to citizens effectively.

The main objectives of this article were to examine the Estonian Road Administration's e-services, their development, promotion strategies and their e-service usage and to analyse the ERA's case study, its statistics and available information. This current study explained how it is possible to increase e-service usage, while decreasing the ERA's office visits, by implementing marketing activities. The ERA's case study provided a valuable viewpoint, which could be interpreted to other public institutions' or even other countries' context, whose goal is to develop their e-services and to promote them among citizens. The aim of this research was to find out, if there is a correlation between the increase in the ERA's e-service usage and the decrease in the ERA's bureau visits. Moreover, did marketing activities influence the growth of the ERA's e-service usage percentage from all of the ERA's services? Last but not least, did the increase in e-service usage decrease the ERA's office visits, which, in turn, could decrease the lines and workload at the bureaus.

The literature overview and theoretical concepts gave this paper a structural framework through which the research was observed. The theoretical approaches chosen for this thesis were firstly, the socio-technical system approach, which helped to understand the interaction between people and technology. The socio-technical approach creates an extra value for the user. The ERA's e-services also create extra value for the end user – they are easy to use, have less expensive state fees (20% cheaper than going into bureau) and save a user's time. People adopt those services better that are created to satisfy their needs, instead of services which are not focused on the user's needs. The next theoretical concept analysed

services and e-services. What to the terms service and e-service mean? What are the differences between those two concepts? The prefix "e" stands for if something is done electronically. The "service" refers to a process, in which extra value is added for the user. The ERA's e-services can also be described as electronic value added services.

Another theoretical approach which was used were the stages of e-government service. Two suggested models were analysed, the four and the five stage model. The e-government four stage growth model consists of classification, transaction, vertical integration and horizontal integration (Layne, Lee, 2001, p. 124). The new e-government model consists of the web availability, interaction, transaction, transformation and e-democracy stages (Siau, Long, 2005). The five stage model is more suitable for the ERA case study analysis, as it is more novel and similar to the ERA's development process. It is important to divide services into phases, because it gives an overview of the organization's service development phases and gives an indication where the organization wants to be.

Successful e-services have to be user friendly and proactive. Having a service which is designed to have only a few simple clicks could play a large role in a 'good service' concept. The service design approach gives an overview in which direction e-services should be developed. In this overview, Ziraff's handbook (Simson, 2014) played an important role, because it was based on the ERA's example of how to create good governmental e-services.

The methodological approach of the research was based on the ERA's case study and mixed methods of quantitative and qualitative data. Quantitative data was used to analyse e-service usage and bureau visitation statistics of the ERA. Qualitative data was used while analysing descriptions, diagrams, emails and articles. Both statistics were collected from January 2014 until March 2016. The author analysed two main topics. First of all, the correlation between e-service usage and visits to bureaus. In the first paragraph of the analysis, it was discovered that bureaus' visitation number and e-service usage are strongly connected with one another. The hypothesis that the more citizens use e-services, the less people visit the ERA's offices and the smaller are the lines at the bureau, was true. The ERA has the capability to decrease the number of working officials by 50 people. In 2015, many job positions in the ERA were vacant, but this study shows filling those positions would not be necessary, if the trend of e-service usage is growing. If e-service usage grows 1% per month, then visits to the ERA's offices will decrease by 574 clients per month. This statistic shows that public sector spending and the office workforce can be decreased.

In the second part of the analysis, different ERA e-services were characterized; their marketing activities and e-service usage were compared. The e-services chosen for this research were: driving license exchange; ownership transfer; driving instructor licenses; applying for an instructor's certificate; temporary removal from register; registration for driving and theory exam.

Marketing e-services helps to inform citizens about new public sector innovations, which make their lives easier and decrease the workflow at the bureaus. In conclusion, marketing increases e-service usage. To sum up, the research showed that growth of e-service usage decreases Estonian Road Administration bureau visits. Moreover, the public sector marketing activities influence positively the Estonian Road Administration e-service usage percentage from all of the ERA's services. Finally, growth in the ERA's e-service usage decreases the ERA's administrative costs in the long run. According to available data, the ERA's administrative costs should decrease if the ERA continues with the marketing activities and the usage of e-services percentage increases as well.

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E-ZARZĄDZANIE W ŚWIADCZENIU USŁUG PUBLICZNYCH STUDIUM PRZYPADKU: ESTONIA

Streszczenie

W obecnej administracji publicznej technologia i rozwiązania internetowe odgrywają rosnącą rolę w dążeniu do zwiększenia efektywności i ograniczenia kosztów. W artykule wyjaśniono i poddano analizie estoński model e-zarządzania w świadczeniu usług dla oby-

wateli z wykorzystaniem różnych rozwiązań elektronicznych. Na przykładzie biura Estońskiego Zarządu Dróg przedstawiono różne sposoby poprawy szybkości i dostępności usług w różnych częściach kraju bez potrzeby fizycznego pojawienia się w urzędzie. W pierwszej kolejności opisano rozwój estońskich e-usług, omówiono stopnie ich rozwoju i oceniono aspekty teoretyczne. Rezultaty badań prowadzą do wniosku, że sukces usług publicznych zależy nie tylko od zaproponowanych rozwiązań, lecz także od dostępności informacji dla potencjalnych użytkowników – obywateli. Usługa elektroniczna musi być łatwo dostępna, przydatna dla użytkownika i łatwa w użyciu. Jeśli te elementy zostaną uwzględnione już w fazie rozwoju usługi, możliwe jest osiąganie także innych celów w zakresie efektywności i kosztów.

Słowa kluczowe: e-governance, Estonia, modernizacja usług publicznych, Estoński Zarząd Dróg Publicznych, e-usługi