ISSN 2029-7564 (online)
SOCIALINĖS TECHNOLOGIJOS
SOCIAL TECHNOLOGIES
2012, 2(2), p. 335–348

EVALUATION OF PUBLIC E-SERVICES AND INFORMATION TECHNOLOGY ACCESSIBILITY IN DIFFERENT SOCIAL GROUPS

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Abstract

The purpose *of this study is to develop an approach based on the social quality evaluation square model for evaluation of information technology usage in different social groups. Componential view to the accessibility of e-services including IT means providing the possibility to research the influences of different life conditions to usage of the public e-services. The task of this empirical study is directed towards revealing the differences of e-inclusion and e-services accessibility for social groups of citizens of Lithuania, and to compare this accessibility data with other EU countries.*

Design/methodology/approach*—the approach is based on the square model of social quality evaluation of information technology usage in different social groups. The social division square model includes an assessment of quality according to the evaluation of socio-economic security, social inclusion, social cohesion, and empowerment. Empowerment can be defined as consisting of individual or collective decisions to act on one's own life.*

Findings*—the results are demonstrated by the accessibility of public e-services data, which are evaluated by the quality of social group development according to IT applications. The hypothesis was confirmed that the e-government activities can be realized by properly*

ISSN 2029-7564 (online)
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https://www.mruni.eu/en/mokslo_darbai/st/apie_leidini/index.php

selecting and installing technologies, and using technology facilities. E-services influence the capabilities of state officials to apply modern technology and increase the availability of e-services for social groups. Results consist of individual or collective decisions to act on one's own life, to implementation of effective information technologies in the e-government activities and using of e-services. An important indicator is the implementation of e-services in the activity of citizens. It is submitted as the index of e-participation in dealing with the activities of citizens and the possibilities of authorities directly related with providing services on the internet, participating in different types of social networks and other e-activities.

***Research limitations/implications**—the research of population skills to use the information technology tools and the means would help determine the causes and take appropriate decisions to avoid a digital differentiation of the population. The data for analysis from EU countries are used by official statistics data provided by Eurostat and e-government Survey of United Nations.*

***Practical implications**—the results of this research reveal the differentiation of population skills of usage information technology means. Such information would help determine the e-participation index, evaluate accessibility of e-services. Results influence the appropriate decisions to avoid a digital differentiation of the population.*

***Originality/Value**—the paper presents valuable results and concludes that the e-inclusion of citizens is increased by moving to more open public e-services design development and delivery model, using the collaboration of citizens.*

Keywords: *information communication technology, e-government, e-services, public administration.*

Research type: *analytical comparative review.*

1. Introduction

The idea of creating e-government is an integral part of the on-going efforts of implementing ICT of many countries to modernize the public sector (Cordella, Bonina, 2012; Karlsson et al. 2012). In other words, the e-government is the process of public relations development, controlled by the state and local authorities, the aim of which is to enhance decision-making transparency of the executive power and to provide public services and information to society, business subjects and institutions more qualitatively and efficiently by using information technology facilities (Garuckas, Kaziliūnas, 2008). Citizens' initiatives in this area are necessary.

The idea that information technology can change the public administration is based on assumptions of how an ideal e-government mechanism should act. In scientific research publications we can discover hypotheses of a more perfect model of e-government that can be realized by properly selecting and installing technologies, making use of technology facilities provided as well as capabilities of state officials to apply modern technology.

As predicted by the Swedish state agency for innovation systems, VINNOVA, the government, wishing to keep space with advances in ICT and trying to satisfy their customers' needs, will be obliged to increase the variety of e-services (The Future of e-Government..., 2006). There is no doubt that the new technology will give the authorities more opportunities that will require more effective measures to ensure safety, so VINNOVA scenarios in forecasting processes of e-government in 2016 also foresee a security threat in the e-space.

The aim of this research is to present an approach for evaluation of public e-services and information technology accessibility in the different social groups of Lithuania and comparison of this accessibility data with other EU countries.

2. Application of a social division square model for evaluation of e-service accessibility

Implementation of public e-services has an impact on the public sector's work efficiency and is consistent with the principles of public sector administration stereotypes.

Our approach is based on the square model of social quality evaluation of information technology usage in different social groups. We discover hypotheses that a model of e-government can be realized by properly selecting and installing technologies, making use of technology facilities provided as well as capabilities of state officials to apply modern technology. Such means can influence the e-service accessibility for social groups of citizens.

The social division square model includes an assessment of quality according to the evaluation of socio-economic security; social-inclusion; social cohesion; empowerment, (Fig. 1). Empowerment can be defined as consisting of individual or collective decisions to act on one's own life, so the citizens' initiative in this area is necessary (Guogis, 2010).

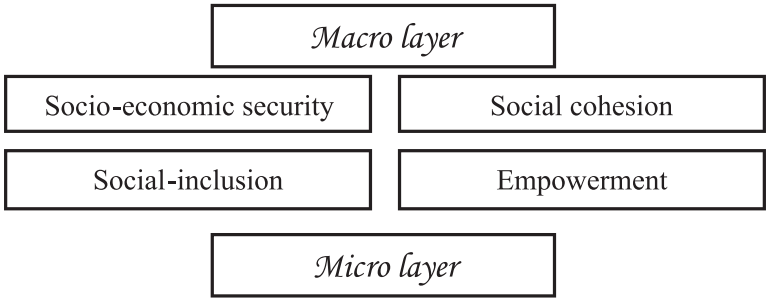


Fig. 1. Social division square model

Indicators of public e-services are systematized. The list of access quality indicators includes the infrastructure, knowledge, operational readiness and cost. The indicators representing service quality include indicators of hardware usage, security, user-friendly methods of use, content and user-friendly work environment. The evaluation results will be presented in next sections.

The quality of the implemented information systems as well as that of data presented in them could be assessed by means of intelligent information systems. Intellectualized information technologies to be used in assessing the quality of work done could raise the legislators work to a higher level. The assessment of administrative burden and its reduction is an important problem in Lithuania and the European Union, in the development of information systems for providing public services. It is important to give the possibility for users to assess the administrative burden and after resolving this problem, it would be useful to apply the standard cost models. With an increase in public consciousness it has become obvious that organizations should be accountable for the use of public resources and therefore the accountability process should be organized and effective, and a fair presentation of financial results has to be inferred from the consistent application of the appropriate accounting standards.

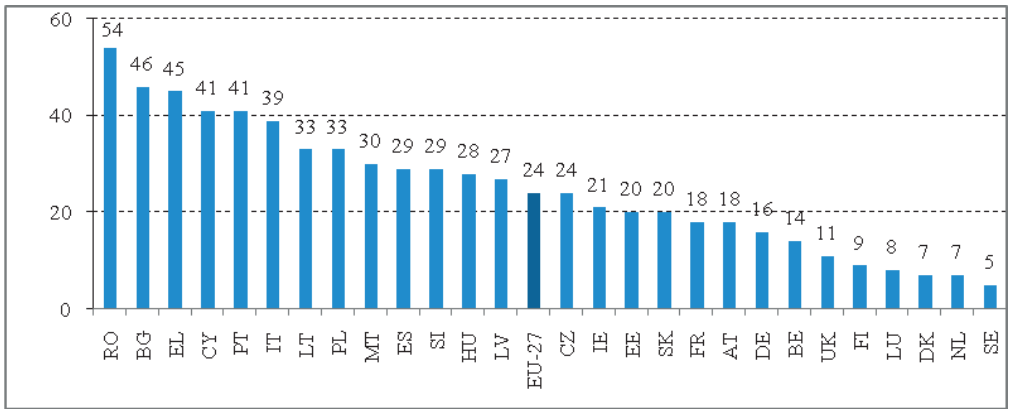
Economic feasibility is ever more often included in e-government assessments. Assessment methods of e-government should include four aspects of e−government: e-services, e-management (understandable as data and information management), maintenance of electronic records, data movement from one government department to another; e-democracy and e-business.

E−government investigators distinguish the following possible e-power estimation techniques: formation of the program aim achievement matrix, providing the results based on the planned objectives, application of the balanced calculation method of results, based on the performance indicators, which relate to the objectives of the program or arise during the program's execution fulfilment development of the cost-profit model, by estimating the program realization costs and profit obtained from the program, evaluation and selection of alternative strategies to realize the targets, with a view to find an economical and effective expenditure model (Bovaird, 2005).

3. Comparison of ICT accessibility in citizen groups of different ages

E-government implementing measures will undoubtedly contribute to the access of public administration e-services, however there appear new factors—IT and public e-services are used by younger persons with higher salaries and those living in urban areas, which sharpens social differences.

Large digital divides were evident when looking at the share of the population who have never used the internet across Member States (Fig. 2). The highest shares of the population with no past experiences in internet use at all, whether at home, at work or at any other place, were registered in Romania (54%), Bulgaria (46%), Greece (45%), Cyprus (41%) and Portugal (41%); while the lowest were in Sweden (5%), the Netherlands and Denmark (both at 7%), Luxembourg (8%) and Finland (9%).



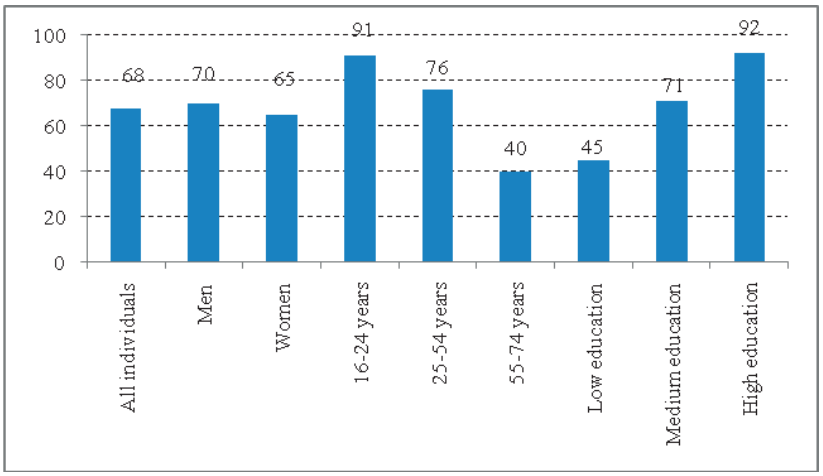
Source: H. Seybert, Eurostat, 2011.

Fig. 2. Individuals who have never used the internet, 2011 (per cent of individuals)

Another four Member States (Italy, Lithuania, Malta and Poland) showed proportions between 30 per cent and below 40 per cent for the population being excluded and without user skills regarding the internet (Fig. 2). Country codes: the European Union (27 countries) is written as EU-27 and includes Belgium (BE), Bulgaria (BG), the Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), the Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE) and the United Kingdom (UK).

The research of population skills to use information technology tools means would help determine the causes and take appropriate decisions to avoid a digital differentiation of the population (Aguilera et al., 2008, Milosz, 2009).

The percentage of regular internet users among younger persons aged 16-24 was 91 per cent while it was only 40 per cent for the age group 55-74 years. The percentage of the population with high formal education in using the internet was more than twice as much as the share for the population with a low level of education. Differences between men and women were relatively small. Slightly more than two thirds of men (70%) and 65 per cent of women used the internet regularly (Fig. 3).



Source: H. Seybert, Eurostat, 2011.

Fig. 3. Individuals who used the internet on average at least once a week, by gender, age group and level of formal education, EU (27), 2011 (per cent of individuals)

4. E-participation as a key to current e-government survey

Many governments are engaging citizens for feedback via their websites. The majority of sites have polls or surveys or feedback buttons, but this is just the tip of the iceberg. Web 2.0 (and Web 3.0 in the near future) will provide citizens with an avenue for direct impact on how government operates. E-participation goes well beyond e-voting; it changes the dynamics between the government and citizens (UN, E-Government…, 2010).

E-participation is one of the key assessments of the current e-government survey. It reflects on how well governments are keeping citizens at the centre of e-services.

The United Nations E-Government Survey recognizes the importance of e-participation in all its aspects, ranging from e-information, e-consultation to e-decision-making. Politicians and political decision makers represent the voice of citizens within government. Now these politicians and decision makers are soliciting information and knowledge from the constituents online and in real-time, seeking to respond more efficiently to their constituents.

The e-participation index shows how governments performed in 2010 compared to 2008. The 2010 Survey included a comprehensive review of how governments are including citizens in their decision-making process, how governments are providing information and knowledge, and how governments are consulting citizens to obtain feedback and opinions.

The best performing e-participation countries as expressed in the e-participation index are listed in Table 1. The e-participation index combines the cumulative scores

from the national portals plus the scores for the citizen-empowerment. The Republic of Korea leads the e-participation index, followed by Australia, Spain and New Zealand.

The e-participation index shows how governments performed in 2010 compared to 2008. The 2010 Survey included a comprehensive review of how governments are including citizens in their decision-making process, how governments are providing information and knowledge, and how governments are consulting citizens to obtain feedback and opinions.

Table 1. The top of 20 countries by evaluation of e-participation

Rank	Country	2010 e-participation index value	2010 rank	2008 rank	Change +/(-)
1	Republic of Korea	1,0000	1	2	1
2	Australia	0,9143	2	5	3
3	Spain	0,8286	3	34	31
4	New Zealand	0,7714	4	6	2
5	United Kingdom	0,7714	4	25	21
6	Japan	0,7571	6	11	5
7	United States	0,7571	6	1	-5
8	Canada	0,7286	8	11	3
9	Estonia	0,6857	9	8	-1
10	Singapore	0,6857	9	10	1
11	Bahrain	0,6714	11	36	25
12	Malaysia	0,6571	12	41	29
13	Denmark	0,6429	13	3	-10
14	Germany	0,6143	14	74	60
15	France	0,6000	15	3	-12
16	Netherlands	0,6000	15	16	1
17	Belgium	0,5857	17	28	11
18	Kazakhstan	0,5571	18	98	80
19	Lithuania	0,5286	19	20	1
20	Slovenia	0,5143	20	55	35

Source: Data of United Nations, E-Government Survey 2010.

When realizing e-government projects in Lithuania as compared to the EU countries, not all the projects achieve the goals set at the highest level. Funding for IT projects is increasing, while the mechanisms and patterns that could create real measurable benefits are not sufficiently standardized and fully encompassing a changed position in a computerized field of activities. An important sphere of action is to provide legal information online with tailor-made search tools.

Based on the experience of 2007, the analysis of public e-services made in October, November, 2008 was supplemented by including the evaluation of e-service maturity

indicators. When evaluating the maturity of public services provided by information technologies, an additional indicator was started, calling as fully online availability of public services (Dzemydienė and Naujikienė, 2011).

The studies of the European Union, the European Commission and the United Nations Economic and Social Department, which summarize the e-government development achievements, while promoting its development, state that e−government is one of the attributes of globalization and its development process is characterized by multi-level governance (UN E-Government…, 2008).

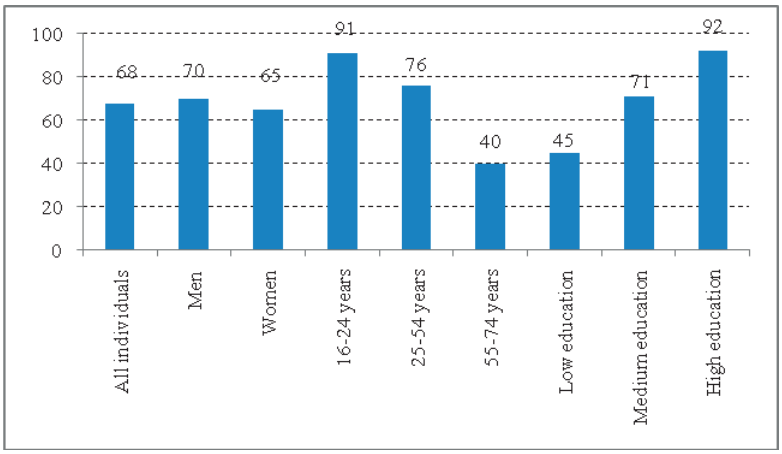
The vision of European Union e-government in 2011–2015 is published in the European Commission's Communique (COM (2010) 743). It states that the European public administration institutions will be "open, flexible, and cooperative by keeping contacts with citizens and enterprises. Using e-government measures, they will increase their operational efficiency and effectiveness and continuously improve the public services in order to meet different users' needs and to achieve the maximum social value, which will enable Europe to move to the most advanced knowledge-based economy."According to Decree No. 301 of the Lithuanian Government on 16 March 2011, "The program of the Lithuanian information society development in 2011–2019" corresponds to the objectives presented by the European Commission Communique of 19 May, 2010 to the European Parliament, the European Economic and Social Committee and the Committee of the European Digital Agenda (COM (2010) 245) and is consistent with the European Commission Communique of 3 March, 2010: "Europe in 2020 strategy of advanced sustainable integration growth" (COM (2010) 2020).

In the Program of Lithuanian Information Society in 2011–2019, the information society is understood as an open, educated and continuously learning, one whose members effectively use ICT in all the fields of activities. The strategic goal of the program is to improve the quality of life of Lithuanian people and business activities by using ICT opportunities and to achieve that no less than 85 per cent of Lithuania's population would use the Internet by 2019. The information society must be developed in accordance with the following priorities: improvement of ICT usage skills of the Lithuanian population, development of the e-content and e-services and promotion of their use; development of the ICT infrastructure (Government of the Republic of Lithuania Resolution No. 301, 2011).

5. Social performance assessment of a square pattern in information technology

Although Lithuania's experiences in new public management are very slight, the disadvantages of sociability was reflected in many fields. Evaluation of one of the more advanced criteria could lead to social performance level.

In 2011 Internet access was only 13.5 per cent in households with an income up to 800 LTL, and 96.6 per cent in households with incomes higher than 2 500 LTL (Fig. 4).

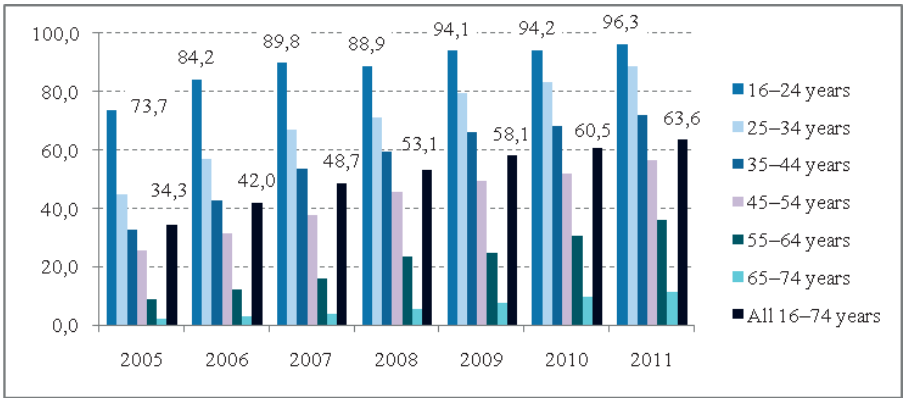


Source: prepared by authors based on data of Lithuania Statistics Department, 2011.

Fig. 4. Households with a computer and Internet access at home by income, 2011 (per household per month, LTL)

Social cohesion, by evaluating the e-participation in the promotion of e-services, are analysed by estimation of informing the population about the availability of legal information available on the Internet, encouraging them to electronically submit comments and proposals. Such decisions have an impact on e-government decisions.

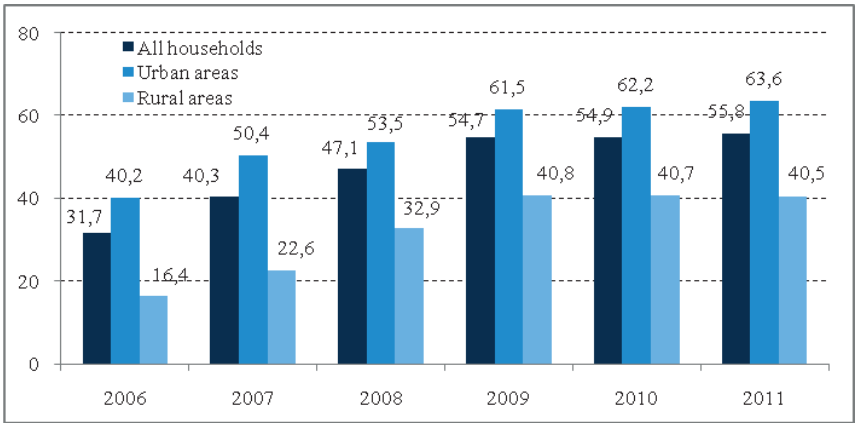
Social inclusion is evaluated and data are presented by percentage of using computers and internet. The data shows that only 11.7 per cent of population used computers in the group of 65–74 years, and 11.4 per cent used the Internet in 2011 (Figure 5).



Source: Source: prepared by authors based on data of Lithuania Statistics Department, 2011.

Fig. 5. Lithuanian citizens who uses the internet by age group 2005–2011 (per cent of citizens)

Internet access was 40.8 per cent in rural area households. Urban residential areas used internet in 63.6 per cent of households (Fig. 6).



Source: prepared by authors based on data of Lithuania Statistics Department, 2011.

Fig. 6. *Households with Internet access at home (per cent)*

To create a new quality flexible learning opportunities, providing individualized teaching and learning in cyberspace lifelong learning opportunities. Lithuania must be widely available and competitively priced broadband Internet access.

Social aspects of the quality of the square reflects the older age groups of social insecurity, the social existence of the digital divide and urgent problems in the empowerment of the population, allowing citizens access to high quality online.

A special role in improving the quality of social division are transferred to the new public management, which in the initial phase of activity should be activated by social activity—all age groups, e-self-expression and participation of citizens in order to remove the older age group from the digital divide.

The new governance model is the sociability and sociality focused management model, which should be a more effective influence on the situation, because the accents of the new governance management, as compared with the new public management, there are others (Domarkas and Juknevičienė, 2007).

Public administration, as a specific activity, is directed towards a main goal—the welfare of the citizens' expectations. Public management system is an essential element in determining the direction of humanization processes, tools and methods of nature. Public administration reform is not enough to improve policy and administrative procedures and technologies. The challenge is to overcome the growing divide between strategic objectives and expectations of citizens' welfare.

Public Management's uniqueness in the orientation of the development of democracy—workers and citizens' participation in the governance process, openness and transparency—should encourage more people for e-participation and inter-institutional cooperation.

Public information will be presented in a correct, accurate, and unbiased manner. The law guarantees the right to information and so contributes to the development of democracy, promotes openness to the public, civic, strengthens independence. Lithuanian

residents have the right to publicly criticize the local authorities or work of officials. All taxpayers and creating official information is free. In addition, the public is much more involved in political activities, they are well aware of the public administration institutions (EK Komunikatas 2011–2015 …, 2010).

6. Conclusions and recommendations

In modernizing the public sector's activities, one of the most important issues is implementation of public e-services and their effectiveness.

In solving the e-service effectiveness issue, it is important to present such things as:

- foreseeing potential employee resistance to changes in the implementation and assimilation of new information technologies and obstacles to overcome with a view towards obtaining innovative solutions;
- proposing e-service schemes, allowing us to detail an electronic public service scenario, without causing information overload, and using that which is stored in standardized databases, by controlling electronic person identification and realizing information systems' interoperability between internal and external networks of organizations;
- providing and systematizing indicators that affect access to services and service quality;
- increasing the effectiveness of public e-services, by encouraging people to use public e-services, to clarify the indicators that have a negative impact on the population activity.

The activities in the e-space and labour skills of residents are the key factors increasing the use of e-service that affect the public's e-service performance considerably.

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VIEŠŲJŲ ELEKTRONINIŲ PASLAUGŲ IR INFORMACINIŲ TECHNOLOGIJŲ PASIEKIAMUMO ĮVERTINIMAS SKIRTINGOSE SOCIALINĖSE GRUPĖSE

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Santrauka*. Sprendžiant elektroninių paslaugų veiksmingumo problemą svarbu tinkamai įgyvendinti ir įsisavinti naujas informacines technologijas bei įveikti skaitmeninės atskirties kliūtis. Svarbu nekaupti perteklinės informacijos viešojo administravimo institucijose, o taikyti sistemų sąveikumo galimybes, panaudojant jau esamą ir saugomą informaciją standartizuotose duomenų bazėse. Ši informacija gali būti suteikiama tik nustačius asmens elektroninę tapatybę, reikalingą daugelio elektroninių paslaugų procesų vykdymui. Paslaugos aptarnavimo vidiniai procesai reikalauja įgyvendinti informacinių sistemų sąveikumą vidiniuose ir išoriniuose organizacijų tinkluose, numatyti ir susisteminti rodiklius, turinčius įtakos paslaugos prieigos ir paslaugos teikimo kokybei.*

Vertinant viešųjų e. paslaugų veiksmingumą vienu iš pažangesnių metodų galėtų tapti socialinės kokybės kvadrato modelis, kurio sudėtinės dalys: socialinis-ekonominis saugumas, socialinė įterptis, socialinė sanglauda, gyventojams suteikiamos galimybės, kurios įvardinamos įgalinimu. Šio modelio pagrindą sudaro IKT veiklos vertinimas, susijęs su atskirų asmenų priimamais sprendimais arba kolektyviniais sprendimais, užtikrinančiais veiksmingesnį e. dalyvavimą. IKT panaudojimas vertinamas kaip viena iš gyvenimo kokybę apibrėžiančių komponentų. Todėl piliečių iniciatyvos šioje srityje yra būtinos.

Socialinį-ekonominį gyventojų nesaugumą IKT srityje parodo oficialūs statistiniai duomenys: 2011 m. prieigą prie interneto turėjo tik 13,5 proc. namų ūkių, kurių pajamos – iki 800 litų, ir 96,6 proc. namų ūkių, kurių pajamos didesnės negu 2 500 litų. Statistiniai duomenys atskleidė vyresnės amžiaus grupės ir kaimo gyventojų skaitmeninės atskirties problemas. Prieigą prie interneto turėjo tik 40,8 proc. kaimo gyvenamųjų vietovių namų ūkių ir ženkliai daugiau – 63,6 proc. namų ūkių miesto gyvenamosiose vietovėse. Svarbu sudaryti lanksčias mokymosi sąlygas, suteikiančias individualizuoto mokymo ir mokymosi elektroninėje erdvėje visą gyvenimą galimybes. Lietuvai būtina visuotinai prieinama bei už konkurencingą kainą teikiama plačiajuosčio ryšio prieiga prie interneto.

Taikomas e. dalyvavimo modeliui socialinės kokybės kvadrato modelis parodė vyresnio amžiaus gyventojų grupių socialinį nesaugumą, socialinės skaitmeninės atskirties egzistavimą ir neatidėliotinai spręstinas gyventojų įgalinimo problemas, sudarant piliečiams kokybiškas sąlygas naudotis internetu.

Turėtų būti aktyvinama visuomeninė veikla – skatinamas visų amžiaus grupių e. dalyvavimas bei piliečių saviraiška, siekiant panaikinti vyresnio amžiaus grupių gyventojų skaitmeninę atskirtį. Viešasis valdymas turėtų daryti veiksmingesnę įtaką susidariusiai padėčiai gerinti, efektyviau sprendžiant viešųjų e. paslaugų problemas.

Raktiniai žodžiai: *informacinės komunikacinės technologijos, e. valdžia, e. paslaugos, viešasis administravimas.*