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E-government Application at the Regional Level in Poland – the Case of SEKAP

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Abstract—The aim of this paper is to explore e-government concept as well as present and assess the application of e-government in the Upper Silesia (the Silesian Voivodship), Poland. In the cognitive part, the essence of e-government as well as the initiatives for building e-government in Europe and Poland have been identified. In the empirical part, the Electronic Communication System for Public Administration (SEKAP) as an example of a "good practice" of an e-government has been presented and the diagnosis of SEKAP application is given. The achieved results can be useful while undertaking activities aimed at e-government development in a country and particular regions.

I. Introduction

The changes occurring for some time in the social, economic and technological fields have dramatically transformed the reality surrounding us [1], [2], [3], [4], [5]. These changes are triggered by information, which has become an indispensible resource for functioning and development of every society, economy, organization and a human being of the third millennium [6], [7], [8]. In the new reality the implementation of information-communication technology (ICT) has an enormous potential [9], [10], [11], [12], [13]. The effect of an on-going transformation is the social-economic development as well as the creation of a new society and new economy – information society and knowledge based economy [9], [10], [14], [15], [16].

A socio-economic development is not possible without an effectively operating government (public administration) and especially an electronic government (e-government) [17], [18]. The creation of e-government requires the increasing the role of ICT in the public management and using it to rebuild the internal public administration processes and allowing for an access to the electronic government services [19], [20], [11], [10], [21], [17], [22], [23].

Building e-government has become a priority issue for many countries, regions and cities. In order to become attractive partners on the global and competitive market they have noticed new development possibilities and opportunities. The European Union (EU), including Poland, has written into its strategic planning the building of e-government [24], [25], [26], [27], [28], [29], [30], [31].

The aim of this paper is to explore the e-government concept as well as present and assess the implementation of e-government in the Upper Silesia (the Silesian Voivodship), in Poland. In the cognitive part, the essence of e-government as well as the initiatives on building an e-government in Europe and Poland have been identified. In the empirical part, the Electronic Communication System for Public Administration (SEKAP) as an example of a "good practice" of an e-government has been presented and the diagnosis of SEKAP application is given. The achieved results can be useful while undertaking activities aimed at e-government development in a country and particular regions.

II. Literature and Related Works – E-Government Development

A. Definition and nature of e-government

The concept of “electronic government” appeared around 1993 in the USA and in an abbreviated form (“e-government”) later around 1997 [20], [32]. Several researches and scholars [33], [3], [20], consulting firms [34], as well as such organizations: the European Commission [1], [35], [36], [26], [25], [24], OECD [37] and the World Bank [38], [39] are involved in the discourse on e-government. In general, e-government can be defined as an application of ICT to government processes (public administration) in order to improve services to citizens, business and government agencies (entities).

The OECD has defined e-government as the use of ICT, and the Internet particularly, as a tool to achieve better governance [37]. The Gartner Group has delineated e-government as follows: e-government is the transformation of public sector internal and external relationships through net-enabled operations, information technology, and communications to optimize government service delivery, constituency of participation and governance [34]. Another definition of e-government was presented by the World Bank: “e-government refers to the use by government agencies of information technologies (such as wide area networks, the Internet, and mobile computing) that have the ability to transform relations among citizens, businesses, and other arms of government” [39].

E-government is embedded in combinations of political conditions as well as cultural, technological and organisational changes designed to support and drive a profound transformation in the agencies and entities of the public sector [40]. According to Tolbert and Mossberger e-government has been proposed as a way to transform and improve relations between government agencies and citizens as well as increase citizens’ trust in government [41]. The ICT use in government agencies is necessary to increase public sector efficiency and improve internal administration and management capabilities. In the opinion of several authors, e-

government refers to the delivery of routine government information and services using electronic means, especially using internet technologies [42], [43].

E-government has been defined as government's use of technology, particularly Web portals, to enhance the access to and delivery of government information and services to citizens, business partners, employees, other agencies, and government entities [44], [45]. Currently electronic means adopted by e-government may include: e-mail, discussion groups, blogs, Twitter, and social networking sites, such as Facebook and MySpace [46]. Another interesting concepts of e-government was suggested by Prattipati, which includes three domains: improving government processes (e-administration), connecting citizens (e-citizens and e-services), and building external interactions (e-society) [47], [43].

These definitions of e-government can be used to conceptualize the four basic dimensions shaping e-government [20], [48], [49], [50]:

- e-administration refers to all those administrative and operational processes of a government in which ICTs are utilized;
- e-services (e-government services) refer to public service provision aimed at citizens, businesses and public administration agencies,;
- e-democracy refers to democratic structures, processes, and practices, in which ICTs are utilized to improve transparency, citizen's participation, and democratic decision making; and
- e-governance means cooperation, networking, and partnership relations between public administration agencies, citizens and business organizations.

Currently trends affecting e-government include first of all e-governance [51], [52], [53]. The UNESCO has defined e-governance as involving new styles of leadership, new ways of debating and deciding policy and investment, new ways of accessing education, new ways of listening to citizens and new ways of organising and delivering information and services [53]. E-governance uses the prosumption idea [54], [5], which means that the citizen becomes a co-founder of the services provided by government agencies. E-governance focuses on citizen participation and the creation and use of networked society to improve relations among government agencies and citizens. E-participation and e-society are viewed as "facilitating greater citizen participation in government decision making and improving government transparency and accountability" [55]. E-governance means the use of ICT to support public services, government activities, democratic processes, and relationships among citizens, the civil society, the private sector, and the state [51]. It refers to five interrelated dimensions: a policy framework, enhanced public services, high-quality and cost-effective government operations, citizen engagement in democratic processes, as well as organisational and institutional reform [51]. Promoters of e-governance promise increasing economies of scale in providing improved citizen participation and democratic values, and enhanced government accountability and transparency [55].

To sum up, in our opinion e-government can be viewed as a socio-technical system composed of people, technologies, as well as social and organizational structures and processes. A more detailed definition of e-government applied here is the following: e-government means the ICT utilization and accomplishing organizational, process, legal, competence and cultural transformation in the government agencies offices, in order to make e-government services electronically accessible to various stakeholders (entrepreneurs, citizens and employees of government entities). The foundation of such an understanding of e-government are e-government services provided at different levels of maturity and to different stakeholders.

In fact, e-government delivers several e-government services to citizens, businesses (entrepreneurs) and government agencies. They include five forms of the relations between governments and their stakeholders: Government-to-Citizens (G2C), Citizens-to-Government (C2G), Government-to-Business (G2B), Business-to-Government (B2G) and Government-to-Government (G2G) [11], [20].

E-government services can be rendered at four levels of maturity [11], [56], [57]. The basic level of maturity is the information level (the first level), meaning that government agencies provide citizens and entrepreneurs with information on their internet portals. In case of the interactive level (the second level), stakeholders communicate electronically with individual government agencies, but a complete settlement of a matter requires a personal visit in an agency. The third level, called the transactional level, is associated with completion of all the actions necessary to deal with an official matter electronically. The last fourth level of maturity known as the integration level ensures the integration of various e-government services across the public (not just individual agencies).

The implementation of integrated e-government (the fourth level of maturity of e-services) is a project extremely complex and difficult, requiring solutions of various organizational, legal, informational and technological problems. In addition, this class of solutions in different EU countries should be consistent with each other and create a pan-European system of government information and services available to citizens and businesses of all member states. Such solutions require first of all entering within the framework of interoperability (European Interoperability, 2004), which should be understood as a set of assumptions, methodologies, standards and specifications recommended for government agencies to ensure cooperation between these agencies.

B. European initiatives for e-government development

In Europe the need for building and developing a pan-European government was indicated by strategic documents on the Information Society in the European Union. The first of these documents was "eEurope. An Information Society for All" [24], and currently binding is "i2010. A European Information Society for Growth and Employment" [36]. Already in the first of these documents, as one of the key strategic objectives was adopted the availability of e-government services for citizens and entrepreneurs in the EU member states by the end of 2005. At the same time, there were

identified 20 core e-government services, including 12 services for citizens and 8 for entrepreneurs, access to which should be provided in the first place [24]. In order to ensure consistency of e-government services the European Commission published in early 2004, the first version of the European interoperability standards [58], which are continually updated and improved. The document provides technical guidance, semantic and organizational interoperability of government information systems, operating on pan-European scale. Currently the strategy of e-government in Europe, is set by "The Digital Agenda for Europe" [28] one of its important documents in particular, namely: "The European eGovernment Action Plan 2011-2015 – Harnessing ICT to Promote Smart, Sustainable and Innovative Government" [28], [59].

Efficiency and effectiveness as well as greater openness and transparency of e-government are also the subject of recent European Commission initiatives on government services such as:

- a new eGovernment program "Interoperability Solutions for European Public Administrations" (steps to improve electronic collaboration between governments agencies in the EU);
- consolidating web sites and portals, such as "Your Voice in Europe" (on-line access to consultation and debate on the European agenda), "Your Europe" (on-line access to the portal of European and national government agencies) and "SIMAP" (information for the government services and entities interested in public procurement in Europe); and
- "The European Citizens" (enabling citizens to submit comments on the new EU legislation) [60].

One of the initiatives of the European Commission to promote the improvement of public administration, including e-government, is to grant the European Public Sector Award (EPSA). The EPSA aims are, especially, to achieve the following goals: to create a common European administrative space, then devise new administrative problem-solving paradigms, and to create a network of public excellence and, thus, establish the conditions for European learning platforms on public administration solutions. Public administration entities from European countries have applied for the EPSA [61]. Also, the Assembly of European Regions gives the Regional Innovation Award (RIA) for the e-government innovation. The prize aims at honouring European regional authorities' actions, which have stimulated, fostered and implemented innovation in their territory. It aims at promoting best practices as well as demonstrating how regions can contribute to regional economic welfare [62].

The initiative to promote e-government, and especially e-governance, is a web portal ePractice.eu, that hosts an array of exciting communities, which gather members with common interests, first of all e-government, e-integration and e-health communities. The portal allows members of communities to conduct discussions and cooperation, and thus realize the idea of open government, policy co-create and share information on the operation and provision of services by government agencies [63].

C. Polish initiatives for e-government development

In Poland the debate about the development of e-government was initiated by drawing up a document entitled "Action Plan for the Development of Electronic Government (e-government) for the years 2005-2006" [64]. The document described the legal framework for the process of informatization of the country, presented the evaluation of activities in the area of electronic government, and contained an overview of the projects implemented by Polish government agencies. It was also an ex-ante analysis of activities related to the implementation of electronic government in the context of the budgetary perspective in the European Union in 2007-2013.

E-government was very clearly referred to in the "Strategy of Development of Information Society in Poland until 2013" by writing that the information society is such a society in which citizens and businesses consciously utilize the potential of information as the economic, social and cultural, with the effective support of modern and friendly public administration [30]. The public administration, in particular the increased availability and effectiveness of government services through the use of ICT to rebuild the internal processes of administration and mode of providing services, was indicated as a strategic direction of development [30]. The priority initiatives, tasks and activities were all associated with the following objectives: (1) rendering a wide range of government services provided electronically, (2) increasing the efficiency of public administration through extensive use of standardized and interoperable solutions, (3) providing citizens and entrepreneurs as well as local government agencies with records of reference data and other public sector information to be used to expand the content and services of the offer, and (4) supporting the development of pan-European services and mutual recognition of ICT solutions tools [30].

In pursuance of the integrated public administration requirements, work is currently conducted on the national interoperability framework , which defines rules governing the creation and interoperability of information systems in public administration for the implementation of public tasks [65]. A very interesting concept concerning the interoperability is the Integrated Library of Procedures, which includes: procedures for settling administrative issues (database of procedures), the repository of administrative forms (database of forms), all the deeds constituting the legal basis for the procedures in the database of procedure (database of legislation) and identifies the authorities and those who use the electronic administration system (database of agency types) [66].

In order to improve e-government, the state government is working on the introduction of e-governance. The aim is to enable the participation of citizens and businesses in the processes performed in government agencies [67].

In Poland, the result of actions taken to implement e-government is the electronic platform of government services (ePUAP) [68]. ePUAP is a national information system for access to e-government services such C2G/G2C, B2G/G2B and G2G. The system was built in 2006-2008 under the

project "The Construction of an Electronic Platform for Government Services – ePUAP" (Report, 2012). Whereas, the ePUAP2 project is being implemented in the years 2009-2013, which aims to extend the functionality of the ePUAP system and to increase the range of services provided electronically. The use of e-government services in the ePUAP system depends on possessing a personal electronic mailbox (e-mailbox). Until 30 December 2011 there were 94,899 e-mailboxes recorded, including: 66,190 individuals, 9,549 legal persons, 3,808 organizational units without legal personality, 15,352 natural persons conducting economic activity [69].

D. Silesian initiatives for e-government development

In the Silesian Voivodship the framework and directions of development of e-government are outlined by "The Information Society Development Strategy of the Silesian Voivodship by 2015" [31]. This document identified the whole spectrum of the necessary actions to be taken in order to develop e-government, and referring to: raising awareness and competence in the ICT use, improving the technical and economic availability of ICT and increasing the quantity and usability of digital content and services. Also in the Regional Operational Programme of the Silesian Voivodeship for 2007-2013 an increase in the number of government services provided by electronic means has been assumed [69]. At the same time it is forecast that by 2020 there will be a full implementation of the citizen-friendly government idea, accessible anywhere, anytime via the Internet, without the need for citizen's participation in the complicated administrative procedures [29]. Among the projects to implement e-government services are: Building an Open Regional Spatial Information System (ORSIP), Development and Dissemination of the Electronic System for Public Administration - SEKAP2 and the Silesian Public Services Card - ŚKUP.

III. Research Methodology

The conducted study was cognitive-experiential in nature and was performed within the framework of a research project [71]. The cognitive study was based on a critical analysis of international literature and an analysis of European, Polish and Silesian initiatives for the development of e-government. In order to present the practical dimension of e-government named SEKAP, a case study and an action research have been used. The authors of this paper work as experts with the Silesian Centre of Information Society (SCSI) on a regular basis. The SCSI is the coordinator of the e-government development in the Upper Silesia. Studies on the use of the SEKAP system were conducted in the first quarter of 2012. For this purpose an analysis of data from 116 government agencies that provide e-government services through the SEKAP system has been conducted. These include: the Marshal's Office (1), a city with county rights (14), rural counties (11), municipalities (86), subdivisions of the local government (5). In total, in the Silesian Voivodship there are 203 public administration entities, thus 55% of all agencies providing services through the SEKAP system. Data are collected in a database of the SEKAP system.

IV. Research Findings – the SEKAP as a "Good Practice" of E-Government

A. Nature of the SEKAP system

An example of an e-government implementation is the project "The Electronic Communication System for Public Administration – SEKAP". SEKAP is a strategic innovative project of the municipal and district authorities of the Upper Silesia. It was designed and implemented in 2005-2008. The aim of the project was to create an information and communication environment for the provision of government services electronically and to prepare government agencies for the effective implementation of this environment. The result of this project is the SEKAP system, which enables the provision of e-government services including five forms of the relations between governments and their stakeholders: C2G/G2C, B2G/G2B, G2G. The SEKAP system includes the following main modules: Public e-Services Platform (PeUP), Document Management System (SOD), Electronic Forms Platform (PFE), System of Automatic Electronic Signature Verification (CC SEKAP), Data Exchange Module (MWD), Payments System and Security System (Figure 1) [72].

Currently (2009-2012) a project called "Development and Dissemination of the Electronic System for Public Administration in Silesia – SEKAP2" is carried out. Within this framework, work is conducted on the expansion of the SEKAP system. The main objectives of SEKAP2 project are: increasing the number and quality of e-government services, improving interoperability, integration of the SEKAP system with ePUAP system, expansion of SOD in the particular government agencies, the implementation of an e-learning platform and development of training courses content for e-government and the SEKAP system, as well as training for citizens, enterprises and government entities and the promotion of the SEKAP system. Among the new features of the SEKAP system there have already been in place: SMS messaging for visually impaired people, photo codes and a map of government agencies [73].

In order to become a member of the SEKAP system and use e-government services one needs to register an electronic mailbox and confirm its identity. It is also necessary to have an electronic signature (qualified or unqualified). Obtaining a free non-qualified CC SEKAP signature is based on completing and submitting an electronic request to the Certification Center and signing a civil contract. Upon the receipt of an electronic signature one can fully use the services of the SEKAP system. Each user of the SEKAP system may submit a relevant application to an appropriate government entity and settle an official matter at one of three levels of maturity (I – informational, II – interactive or III – transactional) In addition, the SEKAP system is integrated with the ePUAP system. Thanks to this the login and password from the ePUAP system can be used in SEKAP. In the ePUAP system there are stored electronic forms of services provided by the SEKAP system. And further, the SEKAP system supports the secured profile and also uses the payment module on ePUAP.

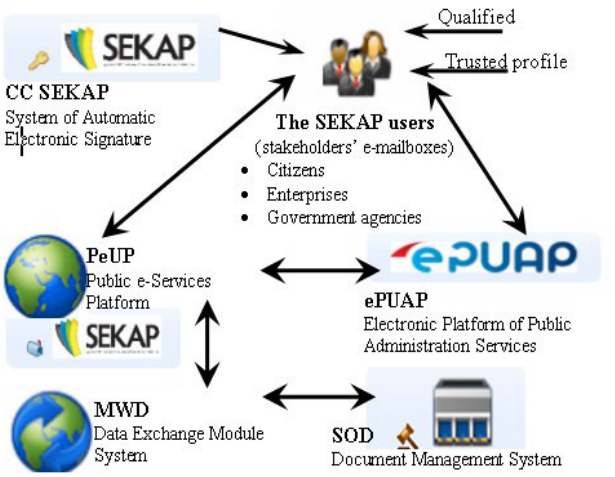

Fig. 1. The architecture of the SEKAP system.

It is worth to mention that this fact was noticed on the European forum in 2009. The voivodship authorities applied for the RIA'2009 award. The RIA'2009 was granted for the SEKAP and the Silesian Voivodship was awarded as the most innovative European region [74]. The award confirms the fact that the SEKAP system can be an example of "a good practice" of e-government.

B. Diagnosis the SEKAP system use

The diagnosis of using the SEKAP system was based on analysis of the number of registered electronic mailboxes, the number of issued CC SEKAP certificates, the number of e-government services available in the SEKAP system and the number of e-government services used.

The number of registered electronic mailboxes is merely 12,686 which is a very small percentage of the Silesian Voivodship population, which amounts to approximately 4.635 million people [75]. Most mailboxes were set up by the users between the 25 to 45 years of age. Also, the negligible number of mailboxes (778) owned by enterprises which total in the voivodship at around 443,000 [76]. The detailed data referring to the electronic mailboxes which registration is necessary for the use of e-government services in the SEKAP system is shown in Figure 2.

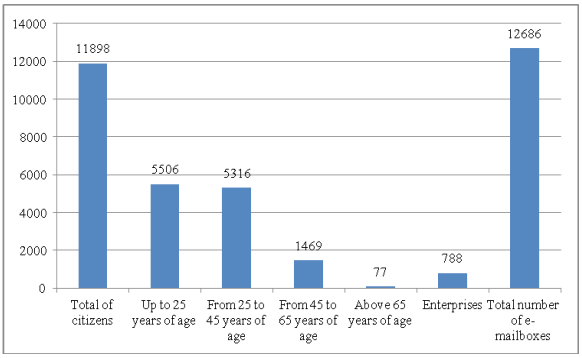

Fig. 2. Number of registered electronic mailboxes in the SEKAP system.

The study also revealed that a very small number of CC SEKAP electronic signatures (6,511) was issued, which are indispensible in order to use the e-government services at the transactional maturity level, and very often at the interactive maturity level. The fact that in relation to the number of registered contact boxes the number of CC SEKAP issued certificates amounts to only 51% is also warring (Figure 3).

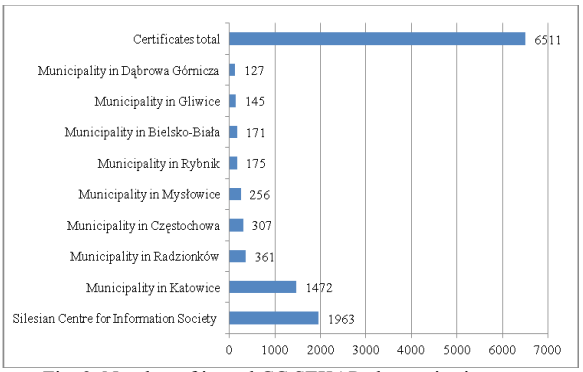

Fig. 3. Number of issued CC SEKAP electronic signatures.

Currently, the SEKAP system includes 501 various e-government services (Figure 4), in particular all services recommended by the European Commission [24]. The list of these services contains 212 e-government services that reached the transactional level, which constitute 42% of all services. In case of G2G relations there are available 80 e-government services at the transactional level, which is 39% all e-government services for government entities. There are 181 (42%) e-government services for citizens and 156 (43%) e-government services for enterprises at the transactional level.

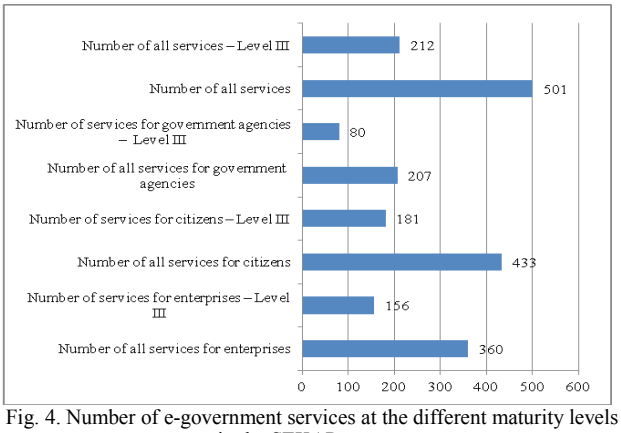

Fig. 4. Number of e-government services at the different maturity levels in the SEKAP system.

The conducted analyzes showed that mostly citizens, enterprises and government agencies use e-government services at the interactive level of maturity. This is a one-way interaction – downloading services forms and two-way interaction – handling electronic services forms. The majority of the stakeholders (34%) use e-government services at the information level of maturity, while the least (14%) use e-government services at the transactional level of maturity (Figure 5).

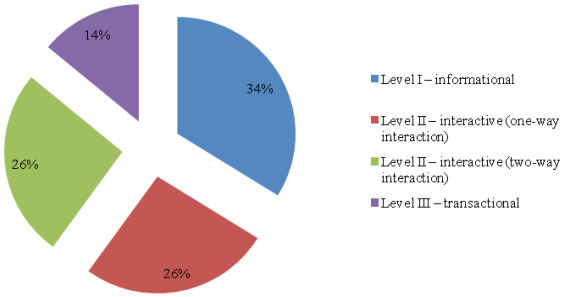

Fig. 5. The use of e-government services at the different levels of maturity in the SEKAP system.

Most often stakeholders use e-government services grouped in a directory under the heading "Other" (Figure 6). It includes e-government services such as: public information, complaints and requests, report technical problems with the functioning of the SEKAP system, official correspondence. The next most frequently used e-government services are related to: business (15.21%), elections (7.20%), driving licenses (4.83%) and registration of residence (4.10%) as well as corporation tax (3.49%). Other e-government services are used to a very small extent.

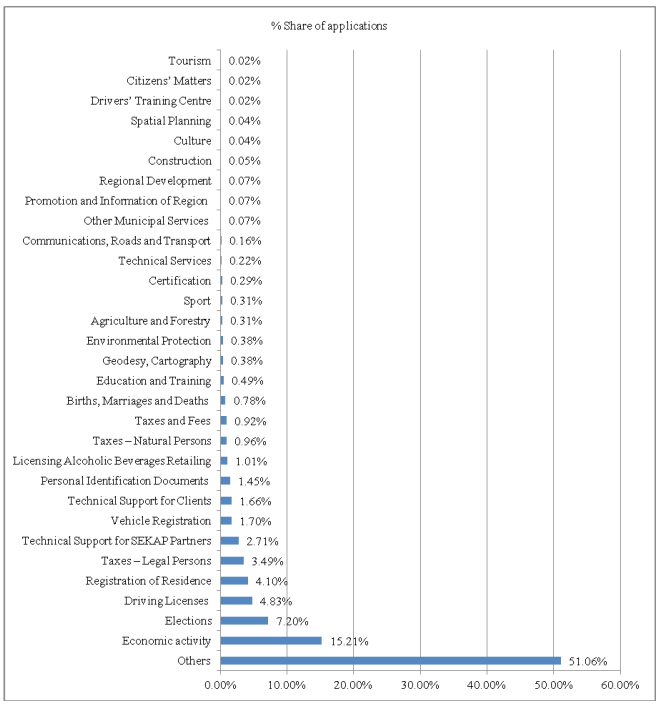

Fig. 6. The use of e-government services in the SEKAP system.

C. Discussion of the SEKAP system use

Summing up, the SEKAP system is an innovative technological and organizational solution. It includes e-government services at the different levels of maturity for citizens, enterprises and government agencies. Research indicates, however, that the use of e-government services is not satisfactory and needs some improvement. Very few citizens, enterprises registered the SEKAP system mailbox, and only half of them have a CC SEKAP electronic signature. Without an electronic mailbox and without an electronic signature e-government services, at the transactional and interactive maturity levels in the SEKAP system, cannot be used. Unfortunately, the users with mailboxes and electronic signatures do not fully utilize the opportunities created by the SEKAP system. E-government services, which are mainly used, include: public information, requests and complaints, official correspondence. Whereas, all other e-government services are used marginally.

V. Conclusion

At the end of the discussion about the application of e-government at the local level in Poland a few reflections can be made. An example of innovative regional solutions to e-government is the SEKAP system in the Upper Silesia. Many concepts and solutions that arose in the course of its design and implementation are universal, and certainly can be an example of "good practice" for other regions. Nonetheless, the implementation of innovative solutions in government agencies does not mean a large interest in them from potential stakeholders at the same time. There are many barriers that hinder or even prevent effective and efficient e-government operations. In order to overcome them, there can be used, based on a study, general recommendations for successful design and implementation of e-government. These recommendations can contribute to the improvement of work, reduce risk and achieve success in transforming a government into e-government.

First, the purpose of projects concerning the construction of e-government should be to provide e-government services for citizens, businesses and government entities, at least at the third level of maturity and within the previously defined rules of interoperability. Second, the construction and development of e-government needs to create awareness and improve the competence of citizens, businesses and government agencies in the e-government services. Third, the promotion of e-government among citizens, businesses and government agencies is necessary. Fourth, construction and development of e-government requires an absolute commitment as well as close and constructive cooperation between central and regional authorities. Fifth, in order to design, implement and use e-government effectively, a corporate architecture is essential. It should include: e-government strategy (priorities for action, the role and objectives of e-government in implementing the information society), people and organizational culture (competence and intelligence, not only employees but also citizens and businesses, supported by the organizational culture), processes (process approach to the implementation of government services) and technology (ICT supporting government processes and delivery of electronic government services). All of these issues will be devoted to further research.

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