INFORMATYKA EKONOMICZNA BUSINESS INFORMATICS 3(25) · 2012

ISSN 1507-3858

Ewa Ziemba, Tomasz Papaj
University of Economics in Katowice, Poland
e-mail: {ewa.ziemba, tomasz.papaj}@ue.katowice.pl

IMPLEMENTATION OF E-GOVERNMENT IN POLAND WITH THE EXAMPLE OF THE SILESIAN VOIVODSHIP[1]

Abstract: The aim of this paper is to explore the concept of e-government as well as to present the implementation of e-government in the Silesian Voivodship, Poland. The structure of the paper is subordinated to this aim. Firstly , the essence of e-government has been described and the initiatives for building e-government in Poland have been identified. Particular attention was paid to the Electronic Communication System for Public Administration (SEKAP) and the diagnosis of SEKAP implementation is given. Finally, the barriers and critical success factors for SEKAP implementation have been indentified. The achieved results can be useful whilst undertaking activities aimed at e-government development in a country and particular regions.

Keywords: e-government, e-government services, e-government implementation, CSFs for the e-government, G2G, G2B/B2G, G2C/C2G, SEKAP.

1. Introduction

The changes which have been occurring for some time in the social, economic and technological fields have dramatically transformed the reality surrounding us [Fox 2006; Hamel, Breen 2007; Hanna 2009, 2010b; Tapscott 2009; Tapscott, Williams 2006]. These changes are triggered off by information, which has become an indispensable resource for the functioning and development of every society, economy, organization and human being of the third millennium [Awad, Ghaziri 2004; Dalkir 2005; Kowalczyk, Nogalski 2007; Grudzewski et al. 2010]. In the new reality, the implementation of information-communication technology (ICT) has enormous potential [Olszak, Ziemba 2009, 2010, 2011b; Roztocki, Weistroffer 2008; Hesse, Muller, Ruß 2008]. The effect of an on-going transformation is social-economic development as well as the creation of a new society and new economy –

[1] Selected parts of this article were published under nonexclusive copyright in *Proceedings of the Federated Conference on Computer Science and Information Systems FedCSIS 2012* (see [Ziemba, Papaj 2012]).

an information society and knowledge-based economy [Olszak, Ziemba 2009, 2010; Webster 2002; Lisiecka, Papaj, Czyż-Gwiazda 2011; Haber (Ed.) 2011].

Socio-economic development is not possible without an effectively operating government (public administration) and especially an electronic government (e-government) [Hanna 2010a; Irani, Love (Eds.) 2008]. The creation of e-government requires a dominant role of ICT in public management and its employment to rebuild the internal public administration processes and allow for access to the electronic government services [Aldrich, Berlot, McClure 2002; Anttiroiko 2008; Papińska-Kaceprek (Ed.) 2008; Olszak, Ziemba 2010, 2011b; Olszak, Ziemba 2011a; Hanna 2010a; Sahu, Dwivedi, Weerakkody 2009; Lisiecka, Papaj (Eds.) 2009].

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 noted new development possibilities and opportunities. The European Union (EU), including Poland, has written into its strategic planning the building of e-government [COM 687 2000; COM 140 2001; COM 567 2003; COM 173 2006; COM 245 2010; COM 2020 2010; *Strategia rozwoju*… 2008; *Strategia rozwoju*… 2009; Hofmokl et al. 2011].

The aim of this paper is to explore the e-government concept as well as to present the implementation of e-government in 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 Poland have been identified. In the empirical part, the Electronic Communication System for Public Administration (SEKAP) has been presented and the diagnosis of SEKAP implementation is given. Moreover, the barriers and critical success factors (CSFs) of the SEKAP implementation have been indentified. We believe that the achieved results can be useful while undertaking activities aimed at e-government development in a country and in particular regions.

2. Literature and related works – e-government, nature and development

2.1. 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 [Anttiroiko 2008; Heeks, Bailur 2006]. Several researchers and scholars [Ziemba, Olszak 2012; Hanna 2010b; Anttiroiko 2008], consulting firms [Baum, Maio 2000], as well as such organizations as: the European Commission [Fox 2006; *Digital Agenda*… 2012; COM 229 2005; COM 567 2003; COM 140 2001; COM 687 2000], OECD [*The E-government Project* 2001] and the World Bank [*A Definition of E-Government* 2003; *The World Bank* 2012] 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 (enterprises, entrepreneurs) and government agencies.

The OECD has defined e-government as the use of ICT, and the Internet in particular, as a tool to achieve better governance [*The E-government Project* 2001]. The Gartner Group has delineated e-government as 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 [Baum, Maio 2000]. 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" [*The World Bank* 2012].

E-government is embedded in combinations of political conditions as well as cultural, technological and organizational changes designed to support and drive a profound transformation in the agencies of the public sector [Cordella, Iannacci 2010]. 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 [Tolbert, Mossberger 2006]. 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 [Siau, Long 2006; Serrano-Cinca, Rueda-Tomás, Portillo-Tarragona 2009].

E-government has been defined as government's use of technology, particularly Web portals, to enhance access to and delivery of government information and services to citizens, business partners, employees, other agencies and government agencies [Layne, Lee 2001; Zhao 2010]. Currently the electronic means adopted by e-government may include: e-mail, discussion groups, blogs, Twitter and social networking sites such as Facebook and MySpace [Brainard, McNutt 2010]. Another interesting concept of e-government was suggested by Prattipati, who includes three domains: improving government processes (e-administration), connecting citizens (e-citizens and e-services), and building external interactions (e-society) [Prattipati 2003; Serrano-Cinca, Rueda-Tomás, Portillo-Tarragona 2009].

These definitions of e-government can be used to conceptualize the four basic dimensions shaping e-government [Anttiroiko 2008; Michel 2005; Gil-García, Helbig 2007; Centeno, van Bavel, Burgelman 2005]:

– 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;

– e-governance means cooperation, networking and partnership relations between public administration agencies, citizens and business organizations.

To sum up, in our opinion e-government can be viewed as a socio-technical system composed of people and 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 agencies).

In fact, e-government delivers several e-government services to citizens (G2C/C2G), businesses (entrepreneurs) (G2B/B2G) and government agencies (G2G) [Olszak, Ziemba 2011b; Meier, Stormer, Gosselin 2009; Anttiroiko 2008]. These can be delivered at four levels of maturity [Olszak, Ziemba 2011b; Andersen, Henriksen 2006; Almarabeh, AbuAli 2010]. 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 the 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 the 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).

2.2. 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" [*Plan działań*… 2004]. 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 an economic, social and cultural resource, with the effective support of a modern and friendly public administration [*Strategia rozwoju*… 2008]. 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 [*Strategia rozwoju*… 2008]. 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 the 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 range services offered and (4) supporting the development of pan-European services and mutual recognition of ICT solutions tools [*Strategia rozwoju*… 2008].

In Poland, the result of actions taken to implement e-government is the electronic platform of government services (ePUAP) [*EPUAP* 2012]. EPUAP is a national information system for access to e-government services such C2G/G2C, B2G/G2B and G2G. The system was built between 2006–2008 within 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 and 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-mail boxes recorded, including: 66,190 individuals, 9,549 legal persons, 3,808 organizational units without legal personality, 15,352 natural persons conducting economic activity [eGoverment… 2012].

3. Research methodology

The conducted study had cognitive-experiential characteristics and was performed within the framework of a research project [*Designing*… 2011–2014]. The research of the nature and development of e-government was based on a critical analysis of international literature and an analysis of Polish initiatives for the development of e-government. In order to present the SEKAP and its implementation, a case study, action research and in-depth interview were used. We have drawn on the experience from cooperation with the Silesian Center of Information Society (SCSI) on e-government development in the Silesian Voivodship. Studies on the implementation 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 was 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 government agencies, thus 55% of all agencies providing services through the SEKAP system. Data are collected in a database of the SEKAP system.

In-depth interviews were used to identify barriers and CSFs for the SEKAP implementation. The respondents were government agencies' officials and the ICT specialists from the Municipal Councils in Żywiec (MC Żywiec) and the Municipal Councils Będzin (MC Będzin). MC Żywiec and MC Będzin have implemented the SEKAP system and constantly undertake efforts to make more and more e-government services available to citizens and entrepreneurs.

4. Research findings – implementation of e-government in the Silesian Voivodship

4.1. 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 Silesian Voivodship. It was designed and implemented in the period 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.

It is worth mentioning that the Regional Innovation Award (RIA) for the e-government innovation RIA 2009 was granted for the SEKAP and the Silesian Voivodship was awarded as the most innovative European region in 2009 [*Assembly*… 2012; *AER*… 2009].

Currently (2009–2012), a project called "Development and Dissemination of the Electronic System for Public Administration in Silesia – SEKAP2" is being carried out. Within this framework, work is conducted on the expansion of the SEKAP system. The main objectives of the SEKAP2 project are: increasing the number and quality of e-government services, improving interoperability, integration of the SEKAP system with ePUAP system, expansion of the document management system 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 agencies and the promotion of the SEKAP system. Among the new features of the SEKAP system there have already been put in place: SMS messaging for visually impaired people, photo codes and a map of government agencies [WWW1].

In order to become a member of the SEKAP system and use e-government services one needs to register an electronic mailbox (e-mail box) 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 the appropriate government agency 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. Furthermore, the SEKAP system supports the secured profile and also uses the payment module on ePUAP.

4.2. Using the SEKAP system

The diagnosis of using the SEKAP system was based on an analysis of the number of registered e-mail boxes, 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 e-mail boxes is only 12,686, which is a very small percentage of the Silesian Voivodship population, which amounts to approximately 4,635 million people [*Rocznik Statystyczny*… 2011]. The detailed data referring to the e-mail boxes of citizens are as follows: most e-mail boxes were set up by users up to 25 years of age (5,506) and between 25 to 45 years of age – 5,316. Citizens of 45 to 65 years of age have 1,469 e-mail boxes and above 65 years of age only 77. Also, the enterprises own a relatively small number of e-mail boxes (778) and they total in the voivodship around 443,000 [*Podmioty gospodarki*… 2011].

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 e-mail boxes the number of CC SEKAP issued certificates amounts to only 51% is also worrying.

Currently, the SEKAP system includes 501 various e-government services (see Figure 1), in particular all services recommended by the European Commission [COM 687 2000]. The list of these services contains 212 e-government services that reached the transactional level, which constitute 42% of all services. In the case of G2G relations there are available 80 e-government services at the transactional level, which is 39% of all e-government services for government agencies. There are 181 (42%) e-government services for citizens and 156 (43%) e-government services for enterprises at the transactional level.

The conducted analyses showed that citizens, enterprises and government agencies use e-government services mostly 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

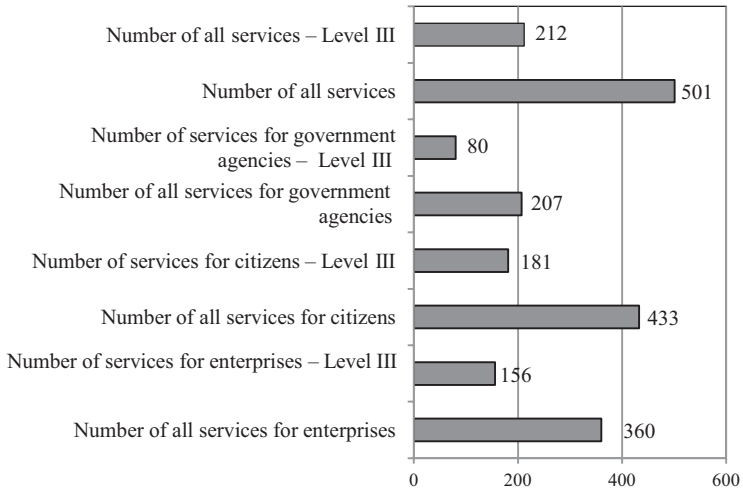

Figure 1. Number of e-government services at different maturity levels in the SEKAP system

Source: own elaboration.

e-government services at the information level of maturity, while the least (14%) use e-government services at the transactional level of maturity (see Figure 2).

Most often stakeholders use e-government services grouped in a directory under the heading "Other" (51.06%). This includes e-government services such as: public information, complaints and requests, reporting technical problems with the functioning of the SEKAP system, and 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.

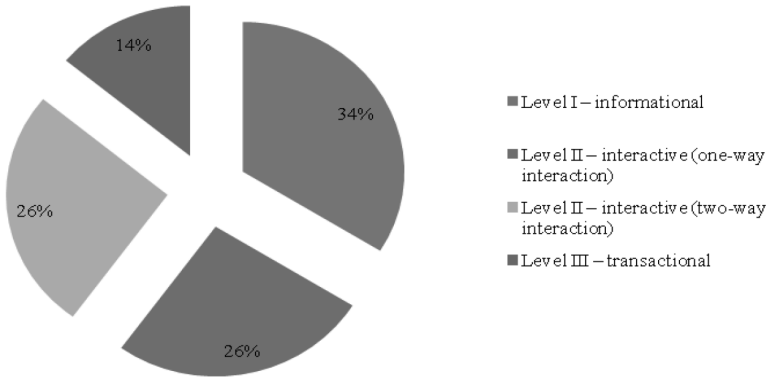

Figure 2. The use of e-government services at different levels of maturity in the SEKAP system

Source: own elaboration.

4.3. Barriers and CSFs of the SEKAP system implementation

The interviews with the government agencies' officials and the ICT specialists responsible for the SEKAP system in MC Żywiec and MC Będzin allowed us to identify the barriers to its implementation. These barriers can be divided into the barriers on the government agencies' side and the barriers on the citizens' and entrepreneurs' side. The barriers that play the largest role in the SEKAP system implementation are presented in Table 1 (in the order from the most to the least significant).

Table 1. The barriers to the SEKAP implementation and utilization

The barriers on the government agencies' side		The barriers on citizens' and entrepreneurs' side	
1	anxiety of government agencies' officials about new solutions	1	need of having electronic signature and multitude of signature types
2	absence of appropriate regulatory systems (inconsistent legal regulations and incoherent interpretation of legal regulations)	2	lack of a need to use (unrealized needs)
3	various types of control and audits conducted in MCs on the basis of paper documents	3	low evaluation of the SEKAP usefulness and its benefits
4	providing government services in the electronic as well as paper form (duplicating work, e.g. sending official letters, lodging an official matter)	4	lack of knowledge of the SEKAP and e-government in general
5	overloading employees with duties and lack of time for implementation work	5	greater confidence in government services provided in a traditional way
6	lack of knowledge and skills	6	low computer literacy (lack of ICT skills)
7	lack of managerial support	7	lack of technical capabilities (digital divide)
8	lack of complex SEKAP application plan and its consistent implementation	8	social-technical gap (lack abilities to adapt and use ICT)
9	lack of motivation to conduct implementation	9	lack of the SEKAP operation training
10	long-standing habit of paper documents and processes connected with them	10	others (age, mental barriers)

Source: own elaboration.

The above most important barriers and knowledge about the critical success factors for ICT projects have become the basis for identifying the CSFs for the SEKAP system implementation and utilization. The interviews with government agencies' officials have led us to indicate the CSFs (see Table 2). CSFs are those areas and operations which should be focused on primarily in order to achieve the most satisfactory results of the SEKAP implementation. Hence, the government

agencies' officials from MC Żywiec pointed out the areas, listed in Table 2, which they focused on. The ranking was as follows: 0–2 – negative, 3 – lack of opinion, 4–6 – positive.

Table 2. The CSFs for the SEKAP implementation and utilization

The critical success factors		Points scored
1	well defined internal processes in MC	6
2	flexibility and possibility of adjusting the SEKAP to the changing needs of users and legal regulations	6
3	competent implementation and operations team of the SEKAP	5
4	clear implementation objectives of the SEKAP	5
5	adjusting the SEKAP to the needs of the SEKAP users (citizens, entrepreneurs and government agencies' officials)	5
6	competent government agencies' officials as the SEKAP efficient users	5
7	effective change management in MC accounting for the SEKAP needs	4
8	well-defined SEKAP users' expectations (citizens, entrepreneurs, government agencies' officials)	4
9	appropriate technologies and ICT tools	4
10	"user-friendliness" of the SEKAP	4
11	right implementation schedule of the SEKAP	3
12	right budget for implementation and utilization of the SEKAP	3
13	managers' support and constant supervision of implementation and utilization of the SEKAP	1
14	competent citizens and entrepreneurs as the SEKAP efficient users	1
15	citizens' and entrepreneurs' awareness of the SEKAP	1
16	the SEKAP project competent manager	0

Source: own elaboration.

4.4. Discussion of the SEKAP system use

Summing up, the SEKAP system is an innovative technological and organizational solution. It includes e-government services at 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.

On the one hand, most citizens and enterprises do not know about the SEKAP itself and e-government services delivered by the SEKAP as well as the benefits from using e-government services. Moreover, they often do not have skills to use the SEKAP and do not have technological and organizational conditions (e.g. the lack of e-signature, digital divide) for using the SEKAP. On the other hand, the

procedures of providing services in government agencies require paper documents and government agencies' officials have got into the habit of using paper documents.

Furthermore, very few citizens and enterprises are registered in the SEKAP system mail box, and only half of them have a CC SEKAP electronic signature. Without an e-mail box 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 e-mail boxes 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.

5. Conclusions

At the end of the discussion about the implementation of e-government at 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 Silesian Voivodship. Many concepts and solutions that arose in the course of its design and implementation are universal, and certainly can be an example of "best practice" for other regions. Nonetheless, the implementation of innovative solutions in government agencies does not mean a strong 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, general recommendations for the successful implementation of e-government can be used, based on a study. 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, enterprises and government agencies, 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, enterprises and government agencies in the e-government services. The promotion and training of e-government among citizens, enterprises and government agencies is necessary.

Third, in order to implement and use e-government effectively we should concentrate on four main elements: e-government strategy, people, processes and technology. E-government strategy requires identification of its objectives as well as activities and projects to be taken. Citizens, government agencies' officials and employees should improve their skills and knowledge about e-government in general and about the SEKAP in particular. The implementation of e-government requires an appropriate organizational culture concentrated on e-government. Moreover, the process approach to the implementation of e-government services

and ICT supporting government processes are necessary as well as the delivery of e-government services.

Fourth, all the barriers to the implementation of e-government must be identified and removed. Furthermore, the critical success factors must be indicated. This often requires an absolute commitment as well as close and constructive cooperation between central and regional authorities.

All of these issues, especially the critical success factors for e-government implementation, will undergo further research.

Acknowledgements

This research has been supported by the National Science Center in Poland under the grant 2011/01/B/HS4/00974 "Designing a system approach to sustainable development of the information society – on the example of Poland", 2011–2014.

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WDROŻENIE *E-GOVERNMENT* W POLSCE NA PRZYKŁADZIE WOJEWÓDZTWA ŚLĄSKIEGO[2]

Streszczenie: Celem artykułu jest przedstawienie koncepcji e-administracji i jej wdrożenia w województwie śląskim. Na wstępie zaprezentowano istotę i genezę e-administracji, jak również zidentyfikowano inicjatywy podejmowane w Polsce na rzecz jej rozwoju. Następnie dokonano projekcji Systemu Elektronicznej Administracji Publicznej SEKAP jako „dobrej praktyki" e-administracji w województwie śląskim. Kolejna część artykułu przedstawia wyniki badań bezpośrednich. Dotyczą one diagnozy wykorzystania systemu SEKAP oraz barier i krytycznych czynników sukcesu jego wdrożenia. Przedstawione rezultaty badań mogą być pomocne w działaniach na rzecz doskonalenia e-administracji w kraju i poszczególnych regionach.

Słowa kluczowe: e-administracja, e-usługi publiczne, wdrożenie e-administracji, krytyczne czynniki sukcesu e-administracji, A2A, A2B/B2A, A2C/C2A, SEKAP.

[2] Badania przeprowadzono w ramach projektu „Opracowanie systemowego podejścia do zrównoważonego rozwoju społeczeństwa informacyjnego – na przykładzie Polski", finansowanego ze środków Narodowego Centrum Nauki przyznanych na podstawie decyzji numer 2011/01/B/HS4/00974, 2011–2014.