## MIND THE GAP: PROVISION AND CITIZENS' TAKE-UP OF E-GOVERNMENT SERVICES IN SLOVAKIA

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Submitted to Central European University Department of Public Policy

In partial fulfillment of the requirements for the degree of Master of Arts in Public Policy

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Budapest, Hungary 2010

## **Executive summary**

Electronic government (e-government) as an online delivery of public services entails a whole range of advantages over brick-and-mortar public agencies. Despite these, citizens do not exploit e-government to its full extent. The present thesis explores the reasons of low take-up of government-to-citizens (G2C) services in Slovakia. Although this research topic is not entirely new, in previous researches the research subjects were narrowed down mainly to the extent and quality of G2C services as to the main variables possibly influencing the level of take-up. Drawing on the theories and models of diffusion of innovations, the present thesis explores also reasons other than the quality and extent, and examines how these relate to the level of take up of Slovak G2C services. For this purpose, the websites of Slovak tax declaration services are examined and interviews with experts in the field of e-government are analyzed. The main conclusion was that the low take-up of G2C services in Slovakia is a result of mutual interaction of several variables. First, low awareness about G2C services translates into suspicious or uninterested citizen attitudes that prevent them from adopting and using G2C services. Second, requirement of electronic signature (ES) for online transaction with public sector poses significant obstacle to adoption and use of G2C services, as ES is too costly for citizens. And last, but not least, service quality confirmed to be crucial for the level of take-up that is decreasing with absence of quality.

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## List of Abbreviations

- AdES Advanced Electronic Signature
- E-government Electronic government
- ECDL European Computer Driving License
- ES Electronic Signature
- EU the European Union
- EU 27+ all EU Member States plus Croatia, Iceland, Norway, and Switzerland; all
- countries scrutinized in the EU e-government benchmark surveys
- $G2B-Government\mbox{-to-Business}$
- G2C Government-to-Citizens
- ICTs Information and Communication Technologies
- OECD Organization for Cooperation and Development
- PAIS Public Administration Information System
- RSS Really Simple Syndication that provides an easy way to monitor fresh web content
- TAM Technology Acceptance Model
- UTAUT Unified Theory of Acceptance and Usage of Technology

### Introduction

The concept of e-government emerged at the beginning of the 1990s with the rapid development of information and communication technologies (ICTs), particularly with the rise of the Internet. The emphasis was first laid on ICTs as on service delivery channels, and a shift towards user centricity occurred in e-government more than a decade later (Organization for Economic Cooperation and Development 2009, 12 - 13). Still, this course of e-government development was not characteristic worldwide: apart from the USA and few e-government leaders in Europe and Asia, e-government development in the rest of the world was nowhere near this pace.

For example, in the 1990s, the concept of e-government in Slovakia was nonexistent. Slovakia as a young democracy, undergoing political and economic transition, faced more significant challenges than moving a brick-and-mortar public sector to a virtual space. The first Slovak administration, governing from 1993 to 1998, infamously known for its authoritative tendencies, was not concerned about needs of citizens in general, let alone about their informatization. E-government became a part of political agenda only with the change of administration in 1998. However, as this administration inherited a country in a bad economic state, society informatization did not become its political priority either. Without political commitment, it comes as no surprise that Slovakia did not integrate among the European Union (EU) newcomers with functional e-government. Due to delayed development of e-government, citizens and businesses in Slovakia cannot profit fully from benefits e-government brings.

In fact, drawing on the latest EU e-government benchmark surveys, Slovakia ranks among the worst in online sophistication as well as in full online availability online. Furthermore, there are also substantial disparities in quality and extent of government-to-business (G2B) and government-to-citizens (G2C) services and their take-up. While most of G2B services are fully available online and businesses as users may execute transactions with public sector online without using any additional channel, regarding G2C services, citizens may submit online only income tax declarations.

There is also substantial gap between the take-up of G2B and G2C services. While G2B services are used to their full potential and there is a demand from businesses for more, G2C services are not used by citizens. Although a correlation between low level of online sophistication, absence of full online availability of G2C services and their low take-up may be assumed, this correlation does not automatically imply causation, as there are other EU member states that despite almost 100% online sophistication and high level of full online availability have low take-up of e-government services (Capgemini 2009, 11). Quality and extent of e-government services are the most common research subjects when it comes to examining reasons behind low take-up of e-government services, but they do not explain all.

Therefore, the main objective of the present thesis is to explore also variables influencing the level of take-up other than quality and extent. To understand better why some services are adopted more rapidly and used more widely than others, the thesis presents the most significant theories and models on diffusion of innovations, such as the Diffusion of Innovations Theory by Everett Rogers, Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Usage of Technology (UTAUT). Drawing on these theories and models, the thesis identifies variables that are crucial for rapid adoption and diffusion of

innovations, and subsequently assesses these variables on the Slovak e-government to identify reasons behind its low take-up.

Identification of the reasons of low take-up of e-government services is indispensable precondition for the improvement of services, which is necessary for citizens to profit fully from benefits services bring. As a complex study focusing on variables encouraging or impeding rapid adoption and high take-up of e-government services is missing in Slovakia, the thesis has an ambition to fill in this gap.

The thesis is structured as following. First, chapter 1 outlines the methodology of the study. Chapter 2 looks at the different theories and models on diffusion of innovations and subsequently applies these to the case of Amazon.com. Chapter 3 presents the current state of e-government in Slovakia. Chapter 4 assesses independent variables possibly influencing the level of take-up using available quantitative and original qualitative findings collected through expert interviews and website visits of selected G2C service.

## **Chapter 1: Methodology**

The main objective of the thesis is to answer the following research question: what are the reasons of low take-up of G2C services in Slovakia? Drawing on this research question and available literature on e-government and on diffusion of innovations, the independent variables influencing the dependent variable, which is the level of take-up of G2C services, are grouped into the following three categories:

- 1. Independent variables on the side of citizens
  - Level of digital divide
  - Level of citizens' e-literacy
  - Citizen attitudes towards the adoption of new ICTs
- 2. Independent variables on the side of e-government services
  - Extent of services
  - Quality of services
  - Reliability of services
  - Security of services
- 3. Independent variables on the side of policy makers
  - Legislation regulating electronic administrative procedure
  - Publicity of services
  - Level of public servants' e-literacy

The main hypothesis of the research is that the level of take-up of e-government services depends on mutual interaction of variables on the side of citizens, e-government services and policy makers, and these variables may either encourage citizens to or discourage them from

adoption of G2C services. To get measurable indicators necessary for the assessment, these variables are operationalized further as described in the table 1.1. Operationalized variables are explained in more detail in the analysis.

Level of digital divide	<ul> <li>access to hardware</li> <li>access to the Internet</li> </ul>
Level of citizen e- literacy	<ul> <li>level of mastering hardware</li> <li>level of mastering software</li> <li>communication abilities</li> <li>ability to exploit available information</li> </ul>
Citizen attitudes towards the adoption of new ICTs	<ul> <li>% of citizens with privacy concerns</li> <li>% of citizens not interested in use of new ICTs</li> <li>data on citizens' preferences in interacting with public sector:         <ul> <li>% of citizens preferring online channels for communication with public sector</li> <li>% of citizens preferring traditional channels for communication with public sector</li> </ul> </li> </ul>
Extent of selected G2C services	<ul> <li>level of online sophistication of G2C services</li> <li>level of full online availability of G2C services</li> </ul>
Quality of selected G2C services	<ul> <li>accessibility</li> <li>information quality</li> <li>technological neutrality</li> <li>interoperability</li> </ul>
Reliability of selected G2C services	<ul> <li>number of hours of service break-up per month</li> </ul>
Security of selected G2C services	<ul> <li>existence of privacy policies on the websites of public agencies</li> <li>existence of legislation on protection of personal data</li> </ul>
Legislation regulating electronic administrative procedure	<ul> <li>existence of electronic signature legislation</li> <li>harmonization of paper-based and online administrative transactions</li> </ul>
Publicity of selected G2C services	<ul> <li>number of awareness campaign about e-government presented in the media</li> </ul>
Level of public servants' e-literacy	<ul> <li>number of public servants who passed ECDL</li> </ul>

Table 1.1 Operationalization of independent variables

Based on the hypothesis of the research, the correlation between dependent and independent variables is complex, as the level of take-up is subject to many factors acting together. To reveal possible causal relations between dependent and independent variables, several methods are used. First, the thesis reviews key literature, starting with the diffusion of innovation theory, TAM and UTAUT in order to explain why some innovations diffuse

rapidly and others do not (Rogers 1995, Davis, Bagozzi and Warshaw 1989, Davis et al. 2003). The case of Amazon.com is used to validate these theories and models and conduces to create the framework of variables for e-government diffusion assessment.

With regards to Slovak G2C services, the variables are assessed by examining available quantitative data (Capgemini 2004, 2006, 2007, and 2009) and qualitative data gathered through semi-structured expert interviews with researchers and practitioners in the field of e-government (see List of Respondents) and through website visits of selected G2C and G2B service that is income and corporate tax declaration.

The semi-structured expert interviews were chosen for several reasons, particularly for their flexibility and possibility to tailor the questions during the interview in order to get additional information or personal opinion on the development, current state and mainly the possible reasons of the low take-up of G2C services. In the week April, 26-30 in Bratislava, Slovakia, the author of the thesis conducted six semi-structured interviews with one analyst, two practitioners, and three public servants from different fields, such as law, society informatization, search engine optimization, who all deal with e-government. The diversity of interviewees' academic and professional background was chosen in order to embrace opinions on all scrutinized independent variables.

The interviews were conducted in the pre-election period in Slovakia, which could have influenced the answers of interviewees. In order to eliminate bias, the author of the thesis avoided any questions suggesting a comparison of the development and state of e-government in Slovakia during the administration of years 1998 - 2006 and of 2006 - 2010. In addition, upcoming elections probably caused that interviewees currently holding political positions

key for e-government development were willing to reveal their true opinions only off-record. Therefore, only four out of six interviews were recorded and their transcripts and questionnaires are available upon the request. In order to identify the main reasons of low take-up of G2C services in Slovakia, content analysis method was used to assess the interviews.

# Chapter 2: Literature Review: When Do Innovations Diffuse?

E-government is defined as an online delivery of public services, leading to the creation of an information society (Lazer and Mayer-Schönberger 2007, 2). It has potential to bring a whole variety of benefits to citizens, businesses, as well as to the public sector. Scholars and practitioners agree that e-government may increase efficiency in communication between citizens and public sector and eliminate democratic deficit through participatory features it entails (Homburg 2008, 87). Also, e-government bears a promise of more transparent and accountable public sector (West 2005, 107) that will be responsive to the needs of citizens and businesses (Lazer and Mayer-Schönberger 2007, 2) 24 hours a day, 7 days a week through the use of ICTs (Homburg 2008, 87). Drawing on these definitions, generally, the concept of e-government is appealing. Therefore, the following question arises: Why is e-government not widely adopted and used by citizens?

An answer may be found in different theories and models on adoption and diffusion of technologies, of which the most significant one is the Diffusion of Innovations Theory introduced by Everett Rogers in 1962. This theory defines how innovations are adopted by individuals or institutions and how they are diffused. In this definition, innovation does not necessarily stand for something new, but rather for something that is perceived as new by potential adopters, and diffusion means a process by which this innovation is transmitted to them (1995, 5-6).

In his theory, Rogers claims that innovations diffuse very slowly in the initial phase, as first, a few innovators have to learn about the existence of innovations and have to be convinced about their benefits (1995, 20). Innovators, who usually represent higher socio-economic groups, make a decision based on objective assessment, as they cannot draw on the experience of others (1995, 22). On the contrary, early adopters decide about the adoption of innovation rather subjectively, drawing on the experience of innovators. Both innovators and early adopters are risk-loving, have a leading potential and want to be the first to use the innovations. Early majority is more risk-averse, and therefore, members of this group wait until the benefits of innovations are evident. Subsequently, they are followed by late majority that is skeptical towards innovations and adopts them just as a result of societal pressure. Conservative laggards who wish to maintain their status quo are the last in adopting innovations. This process of diffusion is valid for most innovations irrespective of the rate of diffusion, which differs from one innovation to another. For instance, while it took rather lengthy period of time for electricity and the telephone to become widely adopted among general public, the Internet was adopted worldwide within ten years and became one of the most rapidly diffusing innovations ever (Dholakia et al. 2004, 38).

In his theory, Rogers explains that to achieve such a rapid rate of adoption, innovations must have a relative advantage over existing concepts, practices or objects so that people have convincing reason to adopt them. Innovations also have to be compatible with past experiences and demands of potential adopters, and with values of the social system they live in. Other preconditions for rapid adoption of innovations are complexity and trialability, in the sense that innovations are user-friendly and comprehensible for all potential adopters, and can be tested before making the final decision about adopting or rejecting them. Last, but not least, innovations are adopted and diffused more rapidly when potential adopters have an opportunity to observe their results, as their visibility encourages discussion, which is important for diffusion, as most experiences with innovations are shared by word-of-mouth, not by official media channels (1995, 15-16).

However, communication among members of different groups of potential adopters may pose a problem, since they have too few socio-economic and socio-cultural similarities to respect each other as opinion leaders (1995, 19). Successful opinion leaders are only those who are able to persuade also potential adopters from different groups than is their own to adopt innovations (1995, 37).

Although Rogers' Diffusion of Innovations Theory proved to be valid on several innovations, it is not the only available theory trying to explain people's acceptance of innovations. Another interesting concept exploring how technological innovations are adopted and diffused is the Technology Acceptance Model (TAM) that was introduced by Fred D. Davis in 1986. TAM explores on two independent variables why some people accept and others reject personal computers. These variables are perceived usefulness and perceived ease-of-use, where the former means the extent to which performance of potential adopter will increase due to the use of new technology, and the latter relates to the degree to which potential adopter perceives mastering new technology as free of effort (Davis, Bagozzi and Warshaw 1989, 982, 985). This model reveals that the take-up of new technologies can be well predicted from the intentions of their potential adopters and depends substantially on the usefulness of these new technologies (Davis, Bagozzi and Warshaw 1989, 997).

In 2003, TAM was further expanded to the Unified Theory of Acceptance and Usage of Technology (UTAUT), which explains how potential adopters' expectancy about technology

performance, ease-of-use, and their attitudes towards technology, social influence, facilitating conditions, self-efficacy, and anxiety about technology influence their behavioral intention to adopt and use new technology (Davis et al. 2003, 447). Examining all these independent variables, UTAUT proved to be robust tool for explaining the rate of adoption and the level of use of new technologies.

These theories and models seem to be valid for several innovations in e-commerce. For the purposes of the thesis, Amazon.com, the US based multinational e-commerce company founded in 1994 as an online book retailer may serve as an example. According to the website statsaholic.com, Amazon.com has had more than 60 millions unique visitors since March 2009. The fact that Amazon.com started from scratch fifteen years ago and nowadays finds itself among the 500 most profitable companies in the world raises the question: where does the success of Amazon.com come from?

Presented theories and models on diffusion of innovations and acceptance of new technologies offer answers. Looking at the case of Amazon.com through the lens of the Diffusion of innovations theory, all important attributes for rapid adoption of innovations were present at its birth. First, although Amazon.com has been operating in a way that was unexplored and new to potential customers back in 1994, it compensated them for engaging with untried methods with significantly lower prices than what traditional brick-and-mortar bookstores offered for their books (Spector 2000, 74). Furthermore, apart from competitive prices and saved time, Amazon.com brought several other advantages to its potential customers, such as user-friendly website, content of which is written in a comprehensible way, and different e-participation tools. For example, potential customers may write and post

their book reviews, sort books by customer ratings, join group conversations about the books and gather friends (Bausch 2003, v - vii).

On the whole, the services at Amazon.com are user-centric, allowing users to personalize them (Bausch 2003, v - vii). Their ease-of-use fulfills the condition of complexity as well. In addition, potential customers have a chance to try the service before they decide to adopt it since the return policy allows the customers to return books back within initially fifteen and currently thirty days (Spector 2000, 79). As the service website creates a great platform for communication among customers, the condition of possibility to observe results of innovation adoption is also fulfilled, as customers may share their experiences with the service there.

Looking at the case of Amazon.com by means of TAM, its rapid adoption and diffusion may be explained by its ease-of-use and usefulness. Amazon.com also fits to UTAUT, as having privacy policy published and written in a comprehensible language frees users from anxiety about adopting and using service. Furthermore, potential adopters perceive Amazon.com freer of effort in comparison with brick-and-mortar bookstores, as they can buy books there with few mouse clicks. All in all, Amazon.com demonstrates that the rate of adoption and diffusion of innovations is not random. If an innovation has a relative advantage over existing concepts, practices or objects and fulfills certain criteria, such as compatibility with values of potential users, and complexity, and brings a possibility of 'free trial' before making final decision and its outcomes are observable, it may trigger higher rate of diffusion.

Although Amazon.com is an example from private sector, many scholars examined theories and models on diffusion of innovations or created new ones on examples from public sector, particularly on e-government (Yun and Opheim 2010, Korteland and Bekkers 2007, Wohler 2009). Certainly, e-government represents an innovation, as it encompasses new ways of working in the public sector in terms of service delivery and organization (Greenhalgh et al. 2004, 582). However, despite its potential to bring different benefits, e-government is not widely adopted and used by citizens. Therefore, scholars use theories and models on diffusion of innovations to identify reasons behind low take-up of e-government services by citizens. Usually, they evaluate if the variables for rapid diffusion formulated in these theories and models are present in selected e-government services. They also adjust these theories and models by omitting the existing variables or adding new ones, such as perceived strength of service security, support from top officials and perceived voluntariness of use meaning the level to which potential adopters perceive the adoption and use of service as voluntary (Sahu and Gupta 2009, 208-209).

In conclusion, once the reasons of low take-up of e-government services are identified, action towards its improvement may be executed borrowing experiences from available best practice examples in e-commerce, such as Amazon.com. However, when implementing e-commerce solutions to e-government, it needs to be considered that unlike e-commerce, e-government has to encompass needs and expectations of all citizens including, citizens with disabilities, citizens from different socio-economic groups, and minorities etc (Carter and Belanger, 12). As requirements on e-government are far more complex than on e-commerce, it is also more difficult and takes more time to fully fulfill them, which may also influence the pace of egovernment adoption.

To conclude, presented theories and models on diffusion of innovations demonstrate that this process is not random and depends very much on the characteristics innovations entail that may either trigger or impede their adoption and use.

### Chapter 3: State of Slovak e-government

As mentioned in the Introduction, the concept of e-government came to Slovakia at the turn of 21<sup>st</sup> century, a decade later than it emerged in the USA and Western Europe. Since then e-government in Slovakia has been undergoing continuous transformations.

In past ten years several e-government strategies were adopted and the distribution of competencies over e-government changed several times. In terms of competences, from 2004 to 2007 it was solely the Ministry of Transport, Posts and Telecommunications that was responsible for e-government development. Then, in 2007, the competencies were transferred and distributed among the Ministry of Finance and the Cabinet Office (Salner and Misina 2007, 2). Furthermore, in the same year, the Plenipotentiary Government Office for Information Society was created. Similarly, the e-government strategies have been subject to frequent change. The National Concept of E-government adopted in 2008, representing already the 7<sup>th</sup> document directly dealing with the informatization of Slovak society and the implementation of e-government services defines the main e-government principles that services should adhere to, describes in detail the architecture of public administration information systems (PAIS), and sets the priorities. However, it does not specify the distribution of financial resources (Ministry of Finance 2008, 12).

Regarding provided e-government services, there have been some improvements in Slovakia, but comparatively slow to other EU member states. The level of online sophistication and full online availability are standardized variables used for the assessment of e-government services within the EU. Online sophistication is defined as reflecting the degree of service online availability, from basic information provision to possibility of completing transactions with the public agencies online without using any additional channels (Capgemini 2007, 10). In addition, full online availability represents only the most advanced degrees of online sophistication, transactional and personalized that enable citizens to execute transactions fully online. Therefore, it is measured on only two levels: either a transaction is viable fully online or not (Capgemini 2007, 10). Using these standardized EU variables, the thesis looks at the current state of Slovak e-government.

Slovakia has been included in the EU benchmark surveys since 2004 when it entered the EU. At the beginning it occupied last places together with other EU newcomers. At that time, only Slovenia and Estonia with high level of sophistication and many fully online available egovernment services represented an exception to this falling behind trend in Central and Eastern European region (Capgemini 2004, 26).

However, later benchmark surveys show that Slovakia is lagging even behind its neighbors Czech Republic and Hungary with which they had similar starting conditions (Capgemini 2006, 10). According to the latest EU benchmark survey, overall level of sophistication reaches 72% in Slovakia, while the EU 27+ average is 83%. In terms of full online availability, Slovakia with 55% is lagging behind the EU27+ average by 16% (Capgemini 2009, 24; 27; 127). These results demonstrating delay in development of e-government in Slovakia are presented in the graphs 3.1 and 3.2:



Table 3.1 Comparison of online sophistication of e-government services among the EU member states in 2007 and 2009



Table 3.2 Comparison of full online availability of e-government services among the EU member states in 2007 and 2009

Not only there are disparities in provision of e-government services between Slovakia and the EU27+ average, but they are also between Slovak G2B and G2C services. Generally, G2C services are less advanced than G2B services as the demand from citizens is not as powerful as from businesses, but the extent to which this tendency is present in Slovakia is substantially large. Furthermore, significant gap is also between the take-up of G2C and G2B services. Take-up of G2C services in Slovakia was only 30% in 2009, while take-up of G2B surpassed the EU27+ average by reaching 88% (Capgemini 2009, 126). Although in Slovakia it may be assumed that low level of online sophistication and absence of full online availability of G2C services translates into their low take-up, generally this explanation is not unambiguous, as the EU member states with almost 100% online sophistication and high level of full online availability, such as Austria, Estonia, Malta, Portugal, and Slovenia have also low take-up of e-government services (Capgemini 2009, 11).

To find out the reasons of low take-up the latest two EU e-government benchmark surveys from 2007 and 2009 have also introduced 'the user-centricity composite indicator' and examined it on G2C and G2B services (Capgemini 2007, 25 and Capgemini 2009, 40). Before that only the take-up of G2C and G2B services was measured. In 2007 decrease of an administrative burden, level of accessibility standards, existence and quality of privacy policies of e-government services was monitored and evaluated. In 2009 the scope of user-centricity measurement broadened to evaluation of user-satisfaction monitoring, one-stop-shop approach and a level of user-focused design of the central portals.

As monitoring of user satisfaction with e-government services is in Slovakia in its infancy, by identifying the reasons of low take-up of G2C services in Slovakia this thesis aims to serve as a significant substitute indicating weak points of Slovak e-government that need improvement.

# Chapter 4: Analysis: Understanding Low Take-up of G2C Services in Slovakia

Based on presented facts the level of online sophistication of e-government services does not always reflect their level of take-up, particularly the level of take-up of G2C services that is low in most EU member states, also in those with high online sophistication (Capgemini 2009, 5, 11). Many scholars argue that e-government services have to adhere to high quality standards to achieve their wide adoption and use by citizens (Corradini, Polzonetti and Re 2009, 29). Therefore, research community has lately focused more on e-government quality assessment in its studies. However, other important variables, which have a potential to explain low take-up of e-government services as well are not given sufficient attention yet.

The main objective of the chapter is to present these variables, quality included, and find out which of them best explains the low take-up of G2C services in Slovakia. Different independent variables that may influence the level of take-up of G2C services are grouped into three categories, so that when they are identified as being important for the take-up, their source is recognized as well. The three groups are as follows:

- independent variables on the side of citizens,
- independent variables on the side of services,
- and independent variables on the side of policy makers.

The hypotheses are that these independent variables influence the level of take-up and are tested and evaluated using available quantitative and original qualitative findings collected through the visits of website of tax declaration service and expert interviews. In the end, independent variables that are the most important for the take-up of G2C services are identified.

#### 4.1 Independent Variables on the Side of Citizens

This section indentifies using available quantitative and original qualitative findings from expert interviews how citizen attitudes towards the adoption of new ICTs, and the level of digital divide and citizen e-literacy relates to the take-up of G2C services in Slovakia.

#### 4.1.1 Level of Digital Divide

For the purposes of the thesis, digital divide is defined solely as inequities in physical access to ICTs (Morley 2009, 300). This definition is operationalized to the access to ICTs (hardware and the Internet) in general and in risk groups and examined in Slovak conditions. Although, many scholars expand the definition of digital divide to disparities in terms of the level of competencies to use ICTs (Rooksby and Weckert 2004, 36), this aspect of digital divide is omitted here, as e-literacy is introduced in the next section as independent variable.

On the whole, access to ICTs in Slovakia oscillates around the EU27+ average (Capgemini 2009, 126). In 2009, the number of Slovak households with broadband internet reached 62% which is only 3% less than the EU 27+ average. However, risk groups have still poor access to ICTs. The most alarming is the level of access to ICTs among seniors and citizens from underprivileged households, where it does not reach 30%. Access to ICTs among citizens in pre-retirement age, citizens with basic education achieved, unemployed, blue-collar workers and residents of the smallest municipalities is also unsatisfactory (Velsic 2009).

Therefore, although the access to ICTs has been slightly improving, the disparities among different socio-economic groups are substantial: "still many Slovak households do not have basic prerequisites to adopt e-government services" (Pilat 2010). This poses serious obstacle not only to wide adoption and take-up of e-government services, but to building knowledge based economy, as unequal access to ICTs results in disparities in the level of e-literacy. Informatization consultant Lucia Muskova explained this in more detail: "citizens with access to ICTs are motivated to improve their e-skills, as they already had a chance to experience added value that the use of ICTs brings, but citizens without access to ICTs are not motivated to learn" (2010). In the end, significant socio-economic disparities in terms of digital divide may have spill-over effects into other spheres as well.

To conclude, closing digital divide is a crucial prerequisite for wide adoption and take-up of e-government services. In Slovakia, the access has been slightly improving, but still leaving citizens from lower socio-economic groups behind, excluding them from benefits of egovernment services.

#### 4.1.2 Level of Citizen E-literacy

Assuming citizens have access to ICTs, still they become meaningless if citizens do not know how to use them (Economist Intelligence Unit 2007, 12). Therefore, e-literacy is another basic prerequisite for the adoption and take-up of e-government services. This section explores the level of citizen e-literacy in Slovakia operationalized to the ability to master hardware, software, communication abilities and ability to exploit information. The level of citizen eliteracy is also tested on selected G2C services. In the past, literacy was text-based, defined solely as the individual skill of being able to read and write, as the literacy technologies favored the written language (Warschauer 2003, 115). Nowadays, many types of literacy are distinguishable, including e-literacy.

E-literacy is defined as: "the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others" (Martin 2005, 135-136).

For the purposes of the thesis, e-literacy is defined as ability to master ICTs, operationalized to ability to master hardware, software, to communicate, and exploit available information. Attitude and awareness are omitted from the definition, as they are introduced later as independent variables.

In Slovakia, the Institute of Public Affairs has conducted the surveys on citizens' e-literacy on a regular basis. Overall citizen e-literacy has improved in past years, particularly in terms of regional disparities. Whereas in 2007, there was still a significant difference between the level of citizen e-literacy in the capital city region and the rest of Slovakia, in 2009 most regions represented the average level of e-literacy in Slovakia (Velsic 2009).

However, substantial gap has been still observed between urban and rural areas. While the level of e-literacy was above the average in the cities, it was below in villages. In 2009, 10% citizens were e-illiterate in a sense that not only did they lack an ability to master ICTs, but they also did not know what ICTs mean. The least e-literate citizens were above the age of 60,

with basic level of education achieved, unemployed, citizens from underprivileged or elderly households, and residents of the smallest municipalities (Velsic 2009). These results confirm previous arguments of informatization consultant Lucia Muskova that e-literacy is determined by access to ICTs, and citizens without access to ICTs are usually e-illiterate.

In regards to operationalized variables, citizen e-literacy was rated the best in terms of communication skills, whereas ability to master hardware, software and to exploit available information scored low, lagging behind communication skills significantly. The most alarming results proved to be among seniors and citizens from underprivileged households, who do not have any skills to master either hardware, or software. These citizens are also unable to look up the information on the Internet, and the only new ICT they can manage is a mobile phone. However, these two groups represent deviation from the average, as other groups that are also considered problematic in terms of e-literacy, such as citizens in pre-retirement age, citizens with basic education achieved, unemployed, blue-collar workers and residents of the smallest municipalities are able to master both hardware and software and look up information on the Internet at least on a basic level (Velsic 2009). In regards to selected income tax declaration service, 20% of Slovak citizens have the capacity to use it (Velsic 2008, 20).

In line with the survey results, interviewees did not perceive the current overall level of eliteracy as being significant variable influencing the adoption and take-up of e-government services, as it reaches average. However, they warned that the level of e-literacy of seniors, citizens from unprivileged households and residents of the smallest municipalities may exclude them from use of e-government (Muskova 2010, Pilat 2010). To conclude, in general, e-literacy is a basic prerequisite for the adoption and take-up of egovernment services. In Slovakia, as the level of e-literacy has been improving in past years, this variable is not currently identified as an obstacle to adoption and take-up of e-government services, but its disparities among different socio-economic groups are.

#### 4.1.3 Citizen Attitude towards the Adoption of New ICTs

Based on the available literature, positive citizen perception of e-government is a prerequisite for its high take-up (West 2005, 120). This section examines attitudes of Slovak citizens towards new ICTs and e-government services operationalized to privacy concerns, personal preferences, and lack of interest, and evaluates how these are significant for the take-up of egovernment services. However, citizen attitudes are not examined on selected G2C service, income tax declaration, as there are no available data on citizen attitudes towards this.

In Slovakia, systematic monitoring of citizen attitudes towards new ICTs and e-government by the public authorities is missing. The Ministry of Finance has just published the second user-satisfaction study in April 2010. Before, citizen attitudes towards new ICTs and egovernment have been monitored by an independent think tank, the Institute of Public Affairs.

The latest studies of both the Ministry and the Institute revealed that citizens still mostly prefer to interact with public agencies in person, leaving behind communication through telephone, and over the Internet. However, the preferences among citizens who were users of G2C services at the same time substantially differed. Users of G2C services mostly preferred to communicate with public agencies online, then in person and through telephone (Ministry of Finance 2010; Velsic 2008, 5).

Moreover, although both studies revealed serious citizen concerns about privacy protection (The Ministry of Finance 2010; Velsic 2008, 9), they did not prove to be the main reason of low take-up of G2C services. The study of the Institute of Public Affairs revealed that citizens do not use G2C services because of lack of interest and preference of traditional to online channels of communication with public sector (28%).

Interviewees agreed that citizen attitudes are important for the take-up of G2C services and identified the problematic ones in line with the quantitative findings presented above. In addition, regarding preference of traditional channels of communication one of the interviewee mentioned two interesting aspects: "First, many citizens with conservative approach perceive personal visit of public agency more credible, because their personal presence gives them a feeling of accomplished task. Second, many citizens still think if they bring public servants a bribe, they will get things done quicker and better. An aspect of corruption is still present, and although it is surely a remnant of communism, I would not blame only the past for that (Pilat, 2010). In regards to privacy, one of the interviewees expressed doubts that privacy concerns prevent citizens from adopting and using G2C services: "I do not think there is a demand for privacy policies on the websites of public agencies, and unfortunately, there is no offer either" (Muskova, 2010).

In conclusion, positive citizen attitudes towards new ICTs are crucial for the adoption and take-up of e-government services. In Slovakia, citizen attitudes, such as privacy concerns, lack of interest about new ICTs, and perception of public sector as being corrupt are identified as inhibitors to the adoption and take-up of e-government services.

#### 4. 2. Independent Variables on the Side of Services

This section indentifies using available quantitative and original qualitative findings from expert interviews and websites visits of the selected G2C and G2B service, tax declaration service how their extent, quality, reliability, and security influence their take-up in Slovakia.

#### 4.2.1 Extent of Services

E-government services may be used only if they are provided; therefore their extent is basic prerequisite for their take-up (OECD 2009, 15-16). This section explores the extent of e-government services in Slovakia operationalizing it to the level of online sophistication and full online availability whose definitions were given earlier.

Regarding the extent of e-government services, these are commonly divided into following stages based on the level of online sophistication they reach.

- 1. Push services represent a basic level. They serve as notice boards, providing users (citizens and businesses) with information. Uploading governmental reports, drafts of proposed legislation, calls for bids on the websites of public agencies increases their transparency and accountability and demonstrates their commitment to freedom of information. However, these services do not allow any communication between users and public agencies.
- Pull services allow users to download information and forms from the websites and have simple interactions with public agencies, through e-mail or chat rooms. These services represent one-way communication.

- 3. Interactive services allow users to submit downloaded forms online securely. Furthermore, these services are more user-oriented, clustering information and services of different public agencies according to users' preferences. These services stand for two-way communication.
- 4. Transactional services are fully available online. They do not require users to provide information or forms by other than electronic means.
- Individualized services allow users to get them accustomed to their individual needs. Users may subscribe for automatic provision of updates on issues they are specifically interested in (OECD 2009, 39; Zahir 2006, 3).

This definition is graphically presented in the graph 4.1.



Table 4.1 E-government stages based on the level of online sophistication

Based on the available literature, the higher level of online sophistication e-government services achieve, the better (ACM International Conference on Digital Government Research 2007, 184). Full online availability that corresponds to transactional and individualized services is preferred, as it increases "accessibility, convenience, and timeliness of governmental information" and do not require any additional channels of communication with PA (Eppler 2007, 241).

In Slovakia, most G2C services are informational, only income tax declarations comply with requirements for transactional services. Apart from one interviewee (Muskova 2010), others did not perceive the extent of e-government services as significant obstacle to their adoption and take-up.

All in all, in terms of online sophistication and full online availability, income tax declaration service demonstrates sufficient extent, as it is fully online available reaching transactional level. Although it does not set pattern for the rest of services that are often only push or pull services, the extent was not identified as the main obstacle to the adoption and use of G2C services.

#### 4.2.2 Quality of Services

The quality of e-government services is very broad term, encompassing many different variables and there is no commonly accepted framework for e-government quality assessment. Several researchers exploring the quality came up with different frameworks. Galal and Manal propose a multi-perspective evaluation framework examining website content, functionality, effectiveness, usability, user participation, and website features, such as

site map, search functions, navigation; website security and extent of services from both service provider and user perspective (2008, 8-9). Corradini, Polzonetti and Re suggest a framework testing service related variables, such as service popularity, usability, multicanality, trustworthiness, cost, accessibility, adaptability, legality and content quality, and examining implementation related variables, such as interoperability, integrity, standardization, availability etc. (2009, 34 - 35). OECD also includes simple organization according to life situations, in which citizens may find themselves and one-stop-shop approach as quality assessment variables (OECD 2009, 15-16).

The list of variables is not exhaustive in any of these frameworks, but the majority of them include accessibility, information quality and up-to-dateness, interoperability and technological neutrality. These variables will be tested against the selected G2C and G2B service below. Although these variables may not seem connected at the first sight, failure of any of them indicates absence of e-government quality policy that may be detrimental to service quality (Eppler 2007, 243).

On the whole, in Slovakia, only 4% users of G2C services agree that the services fully reflect their needs and expectations (Ministry of Finance 2010). Examining following variables on the case of tax declaration services helps to identify the reasons of user dissatisfaction.

• Accessibility

According to World Health Organization, accessibility in the online environment means catering needs of people with disabilities and making e-services easy to use for them (2010). For the purposes of the thesis, this definition of accessibility is expanded to content

accessibility in different than official language and user-friendly registration, as non-native speakers and citizens with basic e-skills should not be excluded from benefits e-government brings. These operationalized variables will be tested against selected G2C and G2B services, tax declaration services.

In Slovakia, the websites of public agencies have to adhere to the principle of accessibility based on the Decree on PAIS standards of the Act on PAIS (2008). In addition, compliance with this principle has been regularly monitored since 2005, currently in cooperation with the Slovak Blind and Partially Sighted Union. In the studies, selected websites of public agencies are tested against the standards of the World Wide Web Consortium, "Web Content Accessibility Guidelines 1.0" of Web Accessibility Initiative.

Final accessibility rating expressed as a percentage that is given to the websites comprises variables, such as existence of audio description of written or graphic information for blind, text version of audio information for deaf or hard of hearing, bigger font size and contrasting color values for partially sighted etc. (Slovak Blind and Partially Sighted Union 2010). Although the annual results of these accessibility studies have indicated continuous improvement, according to the latest study, still one fourth of the websites of public agencies have significant deficiencies and difficulty to fulfill the obligations of the Act on PAIS and every third public website has accessibility rating below 75% (Slovak Blind and Partially Sighted Union 2009, 5), while the most ideal rating oscillates between 96% and 100% (Slovak Blind and Partially Sighted Union 2010, 5).

From selected websites of income and corporate tax declaration service, the central portal <u>www.portal.gov.sk</u> with 92.4% accessibility rating performed well, while the website of the

Tax Directorate <u>www.drsr.sk</u> reached only 63% accessibility rating (Slovak Blind and partially Sighted Union 2009-I, 1, 3). Both services do not offer an option to switch to blind friendly version transforming the content into pure text or if this option is provided, it is difficult to trace.

In regards to other aspects of accessibility, the content on the portal is available only in Slovak, while the website of the Tax Directorate provides limited information in English. Moreover, registration process is not user-friendly. First, registration is mandatory for all users of interactive or transactional stage of services. Second, users registered on the central portal are given as a login name an eight digit number, which is very inconvenient to remember. Normally, login name is either shorter number or may be arbitrarily chosen by users themselves.

Assessing accessibility of e-government services in Slovakia, the interviewees were very critical, pointing to low enforceability of the Decree on PAIS standards. Although the websites of many public agencies do not comply with the standards, the Ministry of Finance did not impose any fine yet. SEO expert Daniel Duris thinks, "if a precedent maximal fine of 35 000 euro was imposed, public agencies would start to improve their websites" (2010).

Other interviewees criticized incomprehensible handbooks, inconsistent design, and complicated navigation (Muskova 2010). Muskova believed that the main cause behind this is that "e-government services are designed by IT specialists, who do not think about how users would need the services to be like" (2010). She also emphasized that public sector should implement positive experience from private sector: "In private sector, before a new product or service is launched, marketing department is surveying potential users' needs and

expectations. Unfortunately, although this is common in public sector abroad, it is not in Slovakia''(2010). She believed monitoring users' needs already in the design stage of e-government services may help to avoid accessibility deficiencies.

In conclusion, e-government services in Slovakia still do not cater needs of people with disabilities and non-native speakers to desired level. Moreover, registration process is too cumbersome for all users.

• Information quality

Olson defines information quality as meeting the demands of intended use of information. To meet the demands of intended use, the information must be accurate, prompt, relevant, complete, comprehensible, and reliable (2003, 24). This definition is used for the purposes of the thesis, as information that e-government services provide should meet the demands of its users, citizens and businesses to be quality. Accuracy, up-to-dateness, relevance and completeness, and comprehensibility are tested against the selected e-government services.

The results of the Ministry of Finance study revealed that information quality was the main reason of users' dissatisfaction with G2C services. As an obstacle to adoption and use of G2C services they perceived complicatedness of handbook language, information irrelevancy, and long waiting periods for response (2010). Referring back to the definition, these demonstrate lack of information comprehensibility, relevance and up-to-dateness,

In regards to selected G2C service and G2B service, both the central portal, but particularly the website of Tax Directorate provides sufficient amount of information not only on tax declaration submission process, but also on changes in relevant legislation. Also, not all information posted on the central portal is relevant and actual. Information updates available through RSS channel show that these are published unsystematically. For instance, although there were changes in the legislation regarding VAT, they were not published on the portal, only on the website of the Tax Directorate.

The interviewees agreed that information quality is insufficient: "I tried to find some information on the central portal several times, but what I found was unsatisfactory. The information was too general, and answers for specific questions were untraceable" (Duris 2010). Irrelevancy was another emphasized drawback: "Whereas much information G2C services provide is abundant, really important information often lacks. To find out office hours of public agency, a person needs to call it. No such information is available, and if it is, it is impossible to find it" (Muskova 2010).

To conclude, quality information in Slovakia is not sufficient either and may negatively influence the level of take-up of e-government services.

• Technological neutrality

Drawing on the EU proposal on new framework for electronic communications infrastructure and associated services, technological neutrality means a legislation that "neither imposes, nor discriminates in favor of the use of a particular type of technology, but ensures that the same service is regulated in an equivalent manner, irrespective of the means by which it is delivered" (European Commission 1999, v). Based on this definition, the thesis examines whether or not tax declaration services are exploitable to full extent for users with different operating systems (OS) and internet browsers.

In Slovakia, according to the Act on PAIS, standards for public websites also have to be open and technologically neutral (2006, par. 6). However, the website of the Tax Directorate allows submitting tax declarations online only to citizens or businesses who are users of the Windows OS and of the Internet Explorer browser because the National Security Authority certifying components creating advanced electronic signature (AdES) that is indispensable for the full online submission operates only on these platforms. One of the interviewees perceived this rightly as "infringing the EU regulations about technological neutrality" (Duris, 2010).

In conclusion, although weak commitment to the principle of technological neutrality was not identified by interviewees as a main obstacle to adoption and use of e-government services, G2C and G2B tax declaration services demonstrated that a lack of technology neutrality may in fact make use of services impossible.

• Interoperability

Drawing on the EU Access Directive, interoperability stands for:

"the physical and logical linking of public communications networks used by the same or a different undertaking in order to allow the users of one undertaking to communicate with users of the same or another undertaking, or to access services provided by another undertaking" (European Parliament and the Council of the European Union 2002). This definition is tested against the selected G2C and G2B tax declaration service examining whether or not these two are interoperable and relieve citizens and businesses from duplicated filling of personal and identification data into forms by providing them with prefilled forms.

Both income and corporate tax declarations are not prefilled. Interviewees expressed dissatisfaction with the current state: "It is an obstacle to the adoption and use of e-government services that should be centralized at least on the level of data storage. Tax offices, the Social Insurance Agency as well as other public agencies have data about citizens, therefore, they should be able to pull this information from their systems and not bother citizens to enter this information again and again" (Duris 2010).

Legal expert Jaroslav Pilat mentioned an initiative from 2001 to approve the proposal of the Act on prohibition of bullying of natural and legal persons by public agencies enabling to impose fines on public agencies in case they have excessive demands on citizens and businesses. "Unfortunately, it was abandoned very quickly without professional discussion (2010).

All in all, most interviewees agreed that insufficient quality is the main problem and possibly the main obstacle preventing citizens from the use of e-government services (Muskova 2010, Pilat 2010, Druga 2010, Duris 2010, interview with an official from the Ministry of Finance<sup>1</sup> 2010). Referring back to examined operationalized variables, quality of provided information does not meet users' needs, only limited services are accessible for people with disabilities and non-native speakers, the level of service interoperability and technological neutrality is low.

<sup>&</sup>lt;sup>1</sup> This interview was confidential; the name of interviewee is withheld by mutual agreement.

#### 4.2.3 Reliability of Services

Given the fact that 24/7 convenience is one of the greatest advantages of e-government services compared to services provided by traditional brick-and-mortar public agencies (West 2005, 4), their reliability is a basic prerequisite to fulfill user expectations of convenience. Reliability is defined as the possibility a network will function to its intended purpose for a given period of time (Lindqvist, Bo, and Doksum 2003, 15). For the purposes of the thesis, this definition of reliability is operationalized to the number of hours of service break-up per month and year and tested against selected G2C and G2B services.

In Slovakia, the number of hours of breakdown of income and tax declaration service is not evaluated individually, as both services are provided through the website of the Tax Directorate <u>www.drsr.sk</u>. The most up-to-date information is available in the annual report of the Directorate from 2007, which states that reliability of the website has improved significantly from almost 148 hours of break-up in 2005 to almost 72 hours of break-up in 2006 (2008, 99). As this information is not available in the reports from 2008 and 2009, the author of the thesis submitted information request to the Tax Directorate under the Freedom of Information Act demanding for the information on the number of hours of service break-up in 2009 and the first quarter of 2010, but did not get an answer until the thesis deadline.

However, although there was an improvement of service reliability from 2005 to 2007, in March 2010 the website of the Tax Directorate <u>www.drsr.sk</u> collapsed just few days before the deadline for the submission of income tax declarations. As due to breakdown citizens who planned to submit their tax declarations online had to do it in person in the end, the Tax Directorate prolonged the office hours of all tax offices in Slovakia, but the deadline for submission was kept. Interviewees expressed their concern that such negative experience may discourage citizens from using this G2C service in future (Pilat 2010, Muskova 2010). Lucia Muskova emphasized that "if other things functioned well, then people would understand service break-up" (2010). However, as was previously mentioned, quality of e-government services in Slovakia is not satisfactory enough to be motivating for citizens to stay with these services.

In conclusion, if citizens cannot rely on the functionality of e-government service, they may be reluctant to adopt them and if they are already users they may abandon unreliable services. This year's experience from Slovakia, when tax declaration service broke up also demonstrates that reliability is crucial for the take-up of e-government services.

#### 4.2.4 Security of Services

E-government services facilitating access to citizen personal data contribute to the surveillance society (Wilford 2008, 138). Therefore, to be adopted by wide public, they need to create environment of trust, ensure citizens that their personal data are secured with these services (Evans 2003, 40).

For the purposes of the thesis, security means privacy protection where privacy is the demand of natural and legal persons to set for themselves, when, how and to what extent information about them is shared with others (Westin 1967, 7). For the purposes of the thesis, privacy protection is operationalized to the existence of legislation on protection of personal data and existence of privacy policies on the websites of public agencies. In Slovakia, privacy protection is ensured by the Act on Protection of Personal Data that represents transposition of the EU Directive 95/46 EC. However, regarding selected G2B and G2C services in Slovakia, user privacy does not seem to be a priority for public agencies. Income and corporate tax declaration service do not provide any privacy policy on their websites that would clearly state how collected personal data are treated, whether or not they are shared with third parties, and how long they are stored.

Interviewees agreed that the presence of privacy policies on the websites of public agencies is necessary (Muskova 2010, Pilat 2010, Duris 2010). However, Duris mentioned that in the current situation "when most of the services are informational and therefore, citizens do not have to provide their personal data, lack of privacy policies does not represent a main obstacle" (2010).

All in all, although existence of the Act on protection of personal data is positive, absence of privacy policies on the websites of public agencies is serious deficiency.

#### 4.3. Independent Variables on the Side of Policy Makers

This section indentifies using available original qualitative findings from expert interviews how policy makers influence the take-up of e-government services in Slovakia, whether or not they put legislation harmonizing paper and online transactions through, promote current egovernment services, and oblige public servants to improve their e-skills.

#### 4.3.1 Legislation Regulating Electronic Administrative Procedures

For e-government development and its wide adoption and take-up by citizens, legislation regulating electronic administrative procedures, particularly harmonizing paper-based and online transactions needs to be in place. The EU project Barriers to e-government identifies the following eight main areas of legislation where different obstacles to e-government may occur: administrative law, authentication and identification procedures, intellectual property rights, liability legislation, legislation on protection of personal data, freedom of information legislation, reuse of public sector information, and relationships between PA, citizens and other ICTs actors (European Commission 2010). To achieve successful e-government, ideally all eight areas of legislation are regulated taking into account the use of electronic means in PA. However, few of them have particular importance for e-government operation.

Drawing from the EU project findings, indispensable legal prerequisite for e-government is adaptation of administrative procedural rules to the requirements of online environment, and adopting legislation on ES and AdES as an authentication and identification tool ensuring the source and integrity of electronic information. Based on this, the legal environment for egovernment in Slovakia is examined.

In Slovakia, if public agencies want an act of administrative procedure to be realized electronically, the legislation has to specify the conditions for that, as according to the Slovak Constitution "everyone may do what is not forbidden by a law, and no one may be forced to do what a law does not enjoin" (1992, sec. 2, 3).

Electronic communication with public administration is defined in the Act on PAIS and applies to all information systems and registers administrated by state and local government bodies. The Act specifies the standards which the websites of state and local government bodies have to adhere to, oblige them to access any information in PAIS to citizens and business as well as to other public bodies (2006, sec. 3, 4). The Act on PAIS also specifies that the Cabinet Office is responsible for the operation and accessibility of the central portal (2006, sec. 5, 2), and defines conditions under which integrated service access points will be operating (2006, sec. 9a).

The main prerequisite for electronic communication with public administration is electronic signature (ES) or AdES. In Slovakia, both term were introduced and defined in the Act on Electronic Signature no. 215/2002. In accordance with this act, "ES means data in electronic form which are attached to or logically associated with other electronic data, which serve as a method of authentication, and which meets the following requirements: it may not effectively be issued without knowledge of the private key and the electronic document; and on the basis of the knowledge of this information and the public key belonging to this private key used in execution of this information it may be verified that the electronic document to which it is attached or logically linked otherwise, is equal to such an electronic document used for its execution" (2002, sec. 3, 1).

AdES is an ES that must comply with the requirements of Article 3 hereof: it is executed by means of a private key intended for the execution of the AdES; it may be executed only with the security equipment for execution of the ES; the manner of its execution enables the identification in a reliable manner of which natural person executed the AdES; a qualified

certificate to the public key belonging to the private key is issued, and this private key is used for the execution of the AdES (2002, sec. 4, 1).

Adoption of the Act on ES led to the amendments of other acts. In the Civil Code, the requirement of written form required for a particular act is maintained even if this was done by electronic means and signed by AdES. Similarly, this has been stipulated in the Criminal Code, Administrative Procedure Act, and in the Act on Tax Administration. Still, it is required to subsequently submit document, either with a signature or a stamp on it by mail or in person, which creates duplicities and questions the meaningfulness of electronic communication with public administration (Galanda, Pilat and Sumsalova 2008, 23 - 24). Currently, ES and AdES are available through the National Security Authority which certification authorities are registered with.

In September 2009, the Slovak Parliament approved the analysis of legal environment and the list of statutes for the implementation of electronic agendas. The analysis contained binding deadlines for the ministries to implement changes.

Regarding the selected e-government services, as the legislation on electronic administrative procedure is important only for transactional services requiring legally binding identifier, so far it relates only to both income and corporate tax declaration services. Both declarations may be submitted electronically on the portal of the Tax Directorate <u>www.drsr.sk</u>. However, without AdES, users have to submit signed first page of the declaration and statement about filing the declaration electronically, within next five days by mail or in person.

Interviewees emphasized this as an unnecessary duplication and identified it as one of the main obstacles that the current legislation poses to adoption and use of e-government services. Moreover, they emphasized that AdES is not a convenient solution for citizens as it stands now for its cost. "Considering that an ordinary citizens communicate with public administration most often when they have to change name, address etc., for them it would be better if AdES was integrated into ID card and used automatically" (Muskova 2010) However, the pace and viability of such transformation is questionable, "as ID cards are issued for ten years. Therefore, AdES is the simplest solution at the moment, but still should be provided for citizens either for free or a symbolic price" (Duris 2010). Otherwise, citizens will not adopt AdES, because "they do not have many chances to exploit it" (Pilat 2010).

Interviewees were also skeptical regarding the Analysis of legal environment approved in September 2009, because even modern elements have been incorporated into legislation, duplicities have not been removed. For example, the Act on Complaints, reflecting the demands of the analysis has introduced the possibility of submitting complaints electronically in effect from February, 1, 2010. However, if citizens do not have AdES, they have to submit hand-written signed form by mail or in person within next five days after the online submission anyway. "The Act on complaints is predominantly meant for natural persons to complain about wrongfulness of some particular acts. If electronic submission of a complaint is hindered by requiring ES or AdES from natural persons, it is purposeless, as ES and AdES is costly and complicated to obtain. No one will procure ES or AdES solely for complaint submission" (Pilat 2010).

In conclusion, legislation regulating electronic administrative procedure may pose an obstacle for citizens to use e-government services. In Slovakia, although existence of the Act on PAIS and the Act on ES is a positive fact, conditions for obtaining either ES or AdES are very inconvenient. Comparing to what services citizens can get for obtaining ES or AdES, the relative advantage is rather small, as ES and AdES are costly and citizens may use it only for income tax declaration service. Relating this to Everett Rogers' diffusion of innovations theory, under current conditions, the adoption of G2C services requiring ES or AdES will remain slow, as it does not bring any advantage over traditional services.

#### 4.3.2 Publicity of Services

Publicity is defined as the deliberate effort to shape public perception of a subject (Keyes 2010, 301). Similarly as in commerce, publicity is important for building strong recognizable brand in public sector that helps citizens to establish trust (OECD 2009, 89). In regards to e-government as a relatively new field, publicity is crucial, as citizens need to learn about the services to use them (OECD 2009, 15 -16).

In Slovakia, marketing strategy for e-government services is missing. The only campaign that was realized so far and broadcast on different TV and radio stations, presented the Operational Program Informatization of Society that is reference document based on which the projects for the informatization of society from 2007 to 2013 get support from the EU structural funds.

The opinions of interviewees on the marketing of e-government services differ. Some believe that marketing campaigns are crucial for the use of e-government services (Muskova 2010), others assume that until services are ready they are not meaningful (Duris 2010). "Basic prerequisites for the use of marketed product or service need to be in place before the

marketing campaigns are realized. Considering that Slovakia has 2891 municipalities, out of which only 138 are towns and most of the villages have population under 1000 inhabitants and lacks IT equipment with internet connection, marketing campaigns do not represent appropriate solution (Pilat 2010) Regarding the above mentioned campaign for the Operational Program Informatization of Society, one of the interviewees mentioned that: "it was apparently meant only to promote the support from the EU, as information what G2C services are available, how they function was lacking" (Muskova 2010). Rather than on expensive TV and radio campaigns, she put an emphasis on better and more continuous communication with journalists who may intermediate information from public administration to citizens.

Finally, although available surveys demonstrated that awareness is crucial for the use of egovernment services, based on the information acquired from interviewees marketing comes into play only after the services reach sufficient quality. Therefore, at the moment, it is not the most important independent variable influencing the level of take-up of e-government services in Slovakia.

#### 4.3.3 Level of Public Servants' E-Literacy

E-literate staff in public agencies is a basic prerequisite for successful e-government. It is the responsibility of policy makers who set the standards for public service to set the level of e-literacy acceptable for public service. In many countries, the level is low due to a lack of financial resources that does not allow public sector to employ IT skilled staff (Coursey and Norris 2008, 529).

In Slovakia, the statistics focusing particularly on the level of e-literacy of public servants are not available. However, the Civil Service Act specifies the preconditions that an applicant for public service has to fulfill. The amendment of this act from 2006 introduced new precondition that obliged him/her to demonstrate knowledge and skills necessary for effective use of ICTs by obtaining European computer driving license (ECDL)(2006, sec. 14, k). This obligation came into force June, 1, 2006, but was repealed January, 1, 2007. Currently, the Civil Service Act does not require public servants to pass ECDL.

This change was evaluated as a step back by one of the interviewees: "Even though public servants may still attend trainings and pass ECDL, as they are not obliged to do so, only few will be willing" (Muskova 2010).

To conclude, a lack of statistical data on public servants' e-literacy is a significant drawback, as it does not enable to detect in what field improvement is needed and who among public servants represents target group for trainings. Moreover, the repeal of obligation to pass ECDL for public servants has left the applicants for public service without any lowest standard identified and required in terms of e-skills that is not favorable situation for further e-government development.

## Conclusions

The present thesis described the problem of low take-up of G2C services in Slovakia and searched for its reasons by examining the websites of tax declaration services and analyzing available quantitative data and original qualitative findings from expert interviews. As previous researches that have been done in this field focused predominantly on the extent and quality of services as on the most important variables possibly influencing the level of take-up, this thesis drawing on the theories and models of diffusion of innovations identified also variables other than the extent and quality and examined whether or not they are crucial for the level of take-up of G2C services, such as citizen attitudes, level of citizens' and public servants' e-literacy, level of digital divide, service security and reliability, legislation regulating electronic administrative procedures and publicity of services.

In Slovakia, low level of take-up of G2C services proved to be a result of mutual interaction of different variables on the side of citizens, e-government services, and policy makers. However, while some of these variables played significant role for the level of take-up of e-government services, others were rather marginal.

For instance, with regards to variables on the side of citizens, the level of e-literacy noted improvements in past years. Therefore, it was not identified as a significant obstacle to the adoption and use of G2C services in Slovakia. However, deepening disparities in access to ICTs among different socio-economic groups was of greater concern, as citizens from lower socio-economic groups who do not have motivation to obtain basic e-skills risk large social exclusion. Citizen attitudes also proved to play a role in adopting and using G2C services. Many citizens were still either suspicious about new ICTs or simply unwilling to make the

effort to learn how to use them. Some still preferred personal visit of the public agency over online communication, and not exceptionally because they believed that with a small bribe, they will get their things done better and quicker.

With regards to variables on the side of e-government services, the preliminary hypothesis that on the side of e-government services other variables than quality may play more important role did not hold true. Although citizens cared about protection of their personal data online, and service reliability, the most important for them seemed to be quality, which was also demonstrated by the number of citizen objections directed towards the currently provided level of quality.

Lack of political commitment to e-government translated into continuous unsystematic changes coming with new administrations inhibited e-government development and influenced the level of take-up of G2C services indirectly, as it had impact on service quality. Furthermore, legislation regulating electronic administrative procedures as it stands now proved to be significant obstacle for citizens, as it gives them the opportunity to execute transactions with public agencies online only if they have ES or AdES that does not represent an affordable solution for most citizens.

In conclusion, to achieve high take-up of e-government services in Slovakia, all these issues need to be addressed. The theories and models on diffusion of innovations demonstrated that improvement of these issues has potential to encourage adoption and increase take-up of egovernment services. The main aim of the present thesis was to examine variables that influence the level of takeup, and identify among them those that pose obstacle to wide citizens' adoption and take-up of G2C services. The scope of the thesis did not allow to present recommendations on how to overcome these obstacles. However, the findings may serve as a basis for recommendations for the Ministry of Finance and Cabinet Office as bodies responsible for e-government on how to bring citizens to adopt and use G2C services.

## List of Respondents

Jaroslav Pilat, legal expert and director at MESA 10 – Center for Economic and Social Analyses, 27 April 2010, Bratislava; Lucia Muskova, director at ITAPA and Arcys, informatization consulting company 26 April 2010, Bratislava; Daniel Duris, SEO consultant at PIZZA SEO, 29 April 2010, Bratislava, Peter Druga, public servant at the Plenipotentiary Government Office for Information Society, 28 April 2010, Bratislava,

Questionnaires and transcripts are available upon request to the author.

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