Barriers and Opportunities for the Adoption of e-Governance Services

Haroula N. Delopoulos

Abstract—In this article a bibliography research takes place to track down and introduce the barriers and opportunities for the adoption of e-Governance services mainly from the side of citizen, that is to say, the demand side. Although governments invest continuously in producing of e-Governance services, citizens face difficulties to adopt these services. Barriers derive and prevent them from using e-Governance services. Barrier is anything preventing citizens from the adoption of e-Governance services. Barriers impede or do not allow the adoption of e-Governance services by the citizens. If the barriers are pinpointed, it will be possible to take them into consideration while designing e-Governance services which the citizens are likely to use, if the obstacles are raised. The barriers will thus be converted in opportunities that will facilitate the adoption.

Keywords—adoption, barriers, e-governance services, e-participation, opportunities.

I. INTRODUCTION

THE use of Information Communication Technologies (ICT) in the public administration and services is specified as Electronic Governance (e-Gov), which contains organizational changes and new skills for the improvement of public services and democratic processes [1]. The potential of e-Gov exceeds by far the initial achievements of electronic public services.

The European Union (EU) has set strategic objectives of the information society in relation to the citizens in various sectors of e-Gov services in everyday life, such as: a) employments in the public sector, Job search, Announcements (e.g. educational possibilities, price changes in transportation means), b) Summaries of new laws, Official Government Newspaper, Collection of National Statistical Data, c) Electronic submission of forms, d) Demands on issuing public services documents e) Demands of assistance and guidance by public services, f) immediate democracy: Contribution of simple people with their opinions, comments and thoughts regarding imminent statutes, bills, protests, g) Notifications in the services of the entire public sector: change of address,

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marital status, number of children, h) Moral and political protection of citizens, c) Application of the current national penal legislation on the internet nodes prohibiting: children pornography, drug trafficking.

For this purpose the EU undertook in Lisbon the action plan e-Europe 2002 [2] as a modernization guide of the European economy. Then, in the European Council of Seville, the European Committee proposed an updated action plan [1], called e-Europe 2005. Today the EU has set in effect the new action plan eEurope i2010 [3]. The eEurope i2010 is the new strategic frame of European Committee for information society and the mass media. The action plan eEurope i2010 focuses on three priorities: a) the completion of single European information space with the encouragement of an open and competitive internal market for the information society and the mass media b) the reinforcement of innovation and investments in the research with object the ICT in Education c) the achievement of greater productivity through the efficient use of new technologies, which can be achieved with the modification of economic behavior, (making use of new technologies), the adaptation of corporate activities, the web supply of public services and the improvement of skills.

In EU and in many countries of the planet, an intense activation is noticed of both leaders and researchers on issues as broadband technology, interoperability, interactive e-Gov services accessible by all, public conventions (electronic supplies, with use of the Internet, public points of access to the internet, e- learning programs, creation of health e-card, web health services, dynamic environment for electronic entrepreneurship, safe infrastructure of information, safe communications between public services, lifting of legislative obstacles). The state must not forget and ought to include in its mentality and practice issues such as the satisfaction of citizens [4] and the quality of provided services. The coverage of citizens' needs should be the focus of public services ministration.

II. BARRIERS AND OPPORTUNITIES ARE THE TWO SIDES OF THE SAME COIN

It is important to point out that in order for EU to materialize its strategic plans, not only should European governments produce e-Gov services, but also the citizens should adopt services in their everyday routine, that is to say, citizens must use e-Gov services in everyday routine. Barrier is anything preventing the citizens from the adoption of e-Gov services. Barriers have been recorded concerning both the side of supply of e-Gov services and the side of demand. *If the*

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barriers are pinpointed, it will be possible to take them into consideration while designing e-Gov services which the citizens are likely to use, if the obstacles are raised. The barriers will thus be converted in opportunities that will facilitate the adoption. So, barriers and opportunities for the adoption of e-Gov services are the two sides of the same coin. It is observed worldwide that the governments tend to convert more and more public services in web accessible services. However, no one can guarantee that the web accessible services offered by the state to the citizens will indeed be used. Must not be neglected that there are still countries such as Central African Repulic, Erithea, Guinea and other countries [5] that have no internet presence and barriers differ among developed and developing countries both in ICT and education infrastructure [5].

For the application of e-Gov however, many obstacles and barriers should be overcome, while extensive investments are required. The change of procedures as far as the organization and mentalities is time-consuming and many years may be required until the combined investments in ICT funds, organization and skills yield completely their profits. The e-Gov is not only based on technological achievements, but among others, *"is a strategy aimed at offering more effective and more functional services"* [6], it is, that is to say, a way in which, access by citizens to the volume of information owned by the state can be increased [7]. Also, e-Gov is an innovation of society which is often engaged as a flow of information transmitted by the individuals who have the ability to influence the rest of the members of society. However, barriers interfere in this flow [8].

III. BARRIERS HAVE MULTIPLE ASPECTS

The barriers have multiple aspects. From on one side, barriers are detected concerning methodology and how a researcher should see things in the field of e-participation and e-governance. Specially, researchers themselves deal with e-Gov on how e-Gov services must be produced and designed, and pinpoint general barriers that influence the side of supply of e-Gov services as well as the side of demand.

A researcher must follow an holistic [9] framework in order to understand the main elements of e-participation and their interactions. Among general barriers, is the lack of understanding of the complexity and the multiple facets of the field and the fragmented research within single disciplines investigating multidisciplinary contexts in isolation. Respectively, designers must have in mind when they design that e-Gov is a multidisciplinary field.

Also, barriers arise from the interdisciplinary scientific field. E-participation of citizens or in other words, the adoption of e-Gov services, is an interdisciplinary problem [9].

There are different perspectives, in designing and producing e-Gov services, some researchers give priority to what the citizens want. Others deal with e-Gov as a framework, like one-stop shop [10] of e-Gov, which is a

theoretical holistic approach of [11] of e-Gov. Within this framework, the interconnection of all offered e-Gov services is required, as well as the guarantee of accessibility to them by the citizen, from one place only, even if the offered services emanate from different sources (eg public authorities, private institutions). Moreover, it is required that the citizen has accessibility to the above services through a comprehensible and a well structured system, which will correspond to their needs and expectations. One of the major keys factors is the re-designing of public services so as they can be provided through electronic means. One stop-shop model is one approach for the satisfaction to a high degree of citizens' needs, decreasing queuing and bureaucracy. For the effectiveness of electronic governance in the public sector, both the transparency and the e-participation of citizens are essential [12]

Trying to overcome the barriers and turn them to opportunities others researchers [13] try to evaluate e-Gov, by giving priority to the evaluation of the satisfaction of citizens. They are trying to locate problems in the use of e-Gov services and how e-Gov services can become friendlier to the user, especially when services provided via the Internet. Other studies give priority to the needs of socially sensitive groups and they evaluate e-Gov concerning the socio-economic repercussions that are caused by its use [14], as the social exclusion.

IV. BARRIERS FROM THE SIDE OF CITIZEN

From the other side, there is citizen, that is to say, the side of demand. According to international bibliography, a large amount of barriers and opportunities in the use and the adoption of e-Gov services, mentioned as follows:

Barriers of adoption of e-Gov services can be detected concerning some population group characteristics or the citizens in general, such as education and sex, [15], the lack of knowledge, the low level of access to technology, problems of privacy and safety. A decade ago, it was claimed that the electronic signature would replace the handwritten [16]. This mentioned, however today, through our everyday routine, ten years afterwards, a large amount of citizens not only reject the electronic signature, but also refrain from communicating or giving personal data to an impersonal electronic means. Mistrust and fear still exist today.

Among several barriers is pointed the lack of trust [9] by the citizens. Another barrier [17] in the adoption of e-Gov services is confidence. The unwillingness of citizens to use e-Gov services lies on security and privacy of information systems. [18]. Great importance is given to the protection of citizen privacy [19].

Barriers concerning whether e-Gov services will be adopted or not [19], is interrelated to the income, access to the internet, and the saving of time by the citizens. Social e-Gov services concerning low economic status, cannot be adopted by the citizens because they do not have the required knowledge. Certain services as social benefits had better continue being

World Academy of Science, Engineering and Technology
International Journal of Economics and Management Engineering
Vol:4, No:6, 2010

provided through interpersonal communication or telephone, and apply a telephone center wherever suitable, a fact pointing out that it is not always necessary for certain services to become electronic [19]. Digital literacy is a barrier for a large part of world population. Also, a proportion of 37% of the EU population have no internet skills accordingly to the survey of Eurostat, Community survey on ICT usage in households and by individuals [20]. Only few governments of the United Nations use e-Gov services for transactional services or for networking or for e-participation [18] and there is limited demand for e-Gov services online.

A large proportion of the world population does not visit the internet at all. A Large proportion of EU population, about a proportion of 40 % in 2007, have no internet skills [21]. As well as a large proportion of EU population has no internet access, about 57% in 2007. The reasons that have no access might be, the lack of interest/need, the cost of technological equipment, the cost of internet access as well as the lack of internet skills [21]. Citizens among the world that have no access to internet will be likely left out [5].

Internet is a public good and is an expensive one, including the cost of internet access, both software and hardware equipment [21]. Technology infrastructure, by its own, is insufficient to support the adoption of e-Gov services by citizens, is only the first step to "*real access*". This can happen when "*the real access can be translated to opportunities and empowerment. Access must be blended with relevant and culturally appropriate content for transmuting into knowledge. The blended knowledge is processed and utilized to create opportunity for economic and social empowerment*" [5].

The adoption of e-Gov services depends on various factors, among them, the ease of use, the experience of user, accessibility, and the civic engagement. In most countries there are many disadvantaged groups, who are much less likely to use e-Gov services. These subgroups of population include elderly individuals, people with special needs, of low socio-economic level, unemployed, low income, low formal education level, national minorities, and immigrants. These disadvantaged groups make very little use of personal computer. As long as public services become digitalized, a big part of European and global population might not be able to use them. These demographic groups should not be excluded from e-Gov. Readiness of citizens belonging to these groups should be increased as well as their civic engagement. In order, this obstacle to be overcome, the number of individuals from these populations, who will use e-Gov services as active future citizens, must be increased. Concerning subgroups at socio-economic disadvantage in Europe, it is investigated, how ready to use e-Gov services certain population groups are, and particularly those that are at a socio-economic disadvantage in Europe, according to http://www.elost.org/European program eLOST website. It is supported, that ICT enable governments to use new and powerful tools and with their help, render the interactive digital communication with the citizens efficient, better and faster. Recently many governments have undertaken big and complicated ventures towards the development of e-Gov services. However, the use of e-Gov services by the citizens remains in their own will.

Citizens concern for problems in every day life, such as environmental problems, quality of life, unemployment etc. *Until recently, a serious barrier was detected on the aspect of supply, and in the fact that the services were designed without taking into consideration the aspect of demand. In simple words, they don't take in consideration, what the citizens want.* In recent years, efforts are observed towards raising this barrier and designing e-Gov services aiming at both the citizen and the facility of use of an online service. In Europe, priority is given to the increasing supply of e-Gov services in the health sector (e-health), and in the sector of education (e-learning), which are domains that concern the citizens' everyday life and are of immediate priority to them, because they concern the improvement of the quality of life. This is so, according to the website http://www.euser-eu.org/ of the European program "eUSER", which aims at the design and supply of e-Gov services that have the citizen as their target. Attention is given to how citizens manage their health through the e-Gov services and how they will increase their education. The availability and accessibility are considered factors that facilitate the adoption of e-Gov services . In order to surmount the difficulties, it is recommended to investigate the needs of citizens of e-Gov services and how they deal with public administration or develop essential skills for the use of this kind of services. *It is moreover suggested, that particularities and characteristics of population subgroups are investigated, so as to they are taken into consideration at the designing and at the strategic planning of e-Gov services.*

Citizens prefer face to face communication or the telephone communication [22] when using public services. Up to a decade ago, local American governmental websites were used as electronic phonebooks and the citizens' refusal to use new technologies was observed. Recently it has been recorded that the citizens use certain governmental American websites in order to draw information from, and not to make on line transactions or participate politically. On the other hand, we observe that internet use by population subgroups with certain demographic features increases rapidly. Considerable differences concerning internet access are observed in relation to the height of income, nationality, educational level and age. Digital divide [23] can be actually much bigger as far as governmental websites are concerned, than what is generally recorded on the internet. It has been recently recorded, to the surprise of the academic community, and not only, in studies carried out in certain States of America, that the citizens, prefer to transact with the state in traditional ways, that is, by queuing. In the state of Georgia the queues outside public service offices increase instead of decrease. "*Internet is a complicated phenomenon, e-Gov services on line surely have an added value, but for the time being we cannot conclude that e-Gov services more internet sophisticated are always better or more added value than the less internet sophisticated*

e-Gov services" [23].

Decision makers and policy engravers do not use [24] ICT technologies to take decisions, something that should be taken into serious consideration when they materialize e-Gov projects or use services by themselves. The civil servants as well as the decision makers may either facilitate or prevent the growth of e-Gov services [22]. Mentality is important, the civil servants [25] a very specific subgroup of population, can either facilitate or prevent the growth of e-Gov services. The involvement of civil servants in the growth and particularly in the adoption of e-Gov services is related to ICT illiteracy (digital divide) of civil servants, since they are resistant to change because they feel threatened. Thus, the conversion of public services into electronic ones, has to face the resistance of civil servants. If, however there is collaboration and immediate participation in this transition, their resistance is likely to decrease and the use of e-Gov services by them is likely to increase.

A. Barriers at the Side of Demand and at the Side of Supply

Both the side of demand as well as the side of supply are influenced by the institutions and regulations and the barriers of e-Gov services will be prevented or will be overcome and the adoption of e-Gov services will be facilitated or not. The legal aspect of barriers in the adoption of e-Gov services is important. The barriers have a correlation with legal subjects. [26] such as: how consistent they are with the national and European legislation, the safety, the identification and the authentication of the network services users, the intellectual Property Rights co-ownership of digital content, the privacy, the protection of personal data, the freedom of information, the access of citizens to the information aiming at increased public administration transparency, the regulation of relations between public institutions, citizens and enterprises that deal with technologies, the re-use of public information and data of citizens concerning the use of estate, the fortune, the health etc., the lack of confidence, or the poor designing of e-Gov services, the digital divide.

V. CONCLUSION

Until recently, a serious barrier was detected on the aspect of supply, and in the fact that the services were designed without taking into consideration the aspect of demand. In simple words, they don't take in consideration, what the citizens want.

To sum up, we see that it is essential to investigate the features and particularities of certain population subgroups, as factors that influence positively or negatively, the adoption of e-Gov services by the citizens and taken them in consideration at the time e-Gov services are produced and designed. Such features are the income, the formal education, the lack of knowledge, the digital illiteracy, the nationality, whether some citizens belong to a minority, the experience, the age, the physical and mental state, the development of ICT skills, the needs of citizens and how these are valued by the citizens, the culture, the attitudes, the beliefs, the pleasure derived from the use, the readiness, the digital exclusion.

Questions as the following must be given answers even by designers, politicians, decision makers as well by the citizens, before e-Gov services have been produced. Have e-Gov services been designed aiming at the citizen and his needs? At to what extent free access to public data is given to citizens, and if there is real access? To what extent are e-Gov services accessible, available, affordable and easy to use by all the subgroups of population? How much does their adoption depend on or is influenced by legal issues? Why do citizens in some cases prefer face to face interaction and wait in line instead of choosing the communication via internet or telephone?

Why are citizens circumspect, distrustful and perhaps negative to the use of new technologies? Where does the fear for privacy and safety issues spring from, which prevents the citizens from using e-Gov services? Why do they resist change and why do certain demographic groups as the civil servants feel threatened? Why does the use of the internet increase rapidly in population subgroups with certain demographic features, while a big part of the world population doesn't use the internet? Does the use of e-Governance services by the citizens remain at the citizens' will?

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