

Understanding Trust in e-Government

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Since the mid of 1990's, information and communication technologies have influenced the society in a spectacular way, mainly because of the development of the Internet. The dependence on information technology has grown far beyond our expectations. Many institutions have recognized the advantages of this development and entered the digital highway. Governments worldwide have begun to recognize the potential opportunities offered by ICT to fit with citizens' demands, and have started to introduce information and transactions online in what is now called e-Government.

Regardless of how advanced is a country in terms of ICT infrastructure and deployment, many technical and non-technical obstacles must be faced in the adoption and dissemination of e-Government. Concerns about inadequate security and privacy safeguards in electronic networks can lead to distrust in applications of e-Government that might pose risks, such as through unwarranted access to sensitive personal information or vulnerability to online fraud or identity theft. Such concerns can be a major impediment to the take-up of e-Government services. This can also be affected by general trends in perceptions of trust in government, such as those caused by the attitude of a public administration to transparency and openness issues.

In this context, many studies focusing on the citizen adoption of e-Government services suggest that trust, security and transparency are the major issues for e-government adoption. In the present article the attention was directed on the relation between trust and e-government. To fulfill this aim, an exploratory survey was undertaken with the goal to identify what factors could affect the citizens' trust in e-government services. The findings indicated that citizen's higher perception of technological and organisational trustworthiness, the quality and usefulness of e-Government services, the Internet experience and propensity to trust, directly enhanced the trust in e-Government. Age and privacy concerns have a negative influence over trust.

Keywords: *information technologies, trusting factors, trust, e-Government.*

Introduction

Trust appeared with the humanity and the development of social interaction. Almost every aspect of a person's life is based on one or another way in trust. So, trust is a very rich concept, covering a wide range of relationships, conjoining a variety of objects. The concept of trust is intimately linked to risk and expectations: trust is used as a

substitute for risk, but it also creates risk for the truster (Bouckaert and Van de Walle, 2001). As Baier states "Trust involves the belief that others will, so far as they can, look after our interests, that they will not take advantage or harm us. Therefore, trust involves personal vulnerability caused by uncertainty about the future behavior of others, we cannot be sure, but we believe that they will be benign, or at least not malign, and act accordingly in a way which may possibly put us at risk." (Baier, 1986).

The concept of trust has been studied extensively in many disciplines long before the apparition of Internet or e-Government, but each field has its own interpretation. Generally, researchers have difficulties in defining this concept (Emurian & Wang, 2005). Most often they define the concept of trust in a particular context.

Grandison and Sloman (2006) report that the presence of various definitions of trust in the literature is based on two reasons:

- First, trust is an abstract concept, often used in place of related concepts, such as reliability, safety and certainty. Therefore, clear definition of the term and the distinction between it and related concepts have proved a challenge for researchers.
- Second, trust is a psychological concept with many facets, incorporating cognitive, emotional and behavioral dimensions (Johnson and Grayson, 2005).

In order to present a reference point for understanding trust, we present some general definitions from existing research (Table 1).

Because of its complexity, the concept of trust has attracted much attention from a number of different perspectives including:

- the economical approach, where the focus is on actors' reputation and their effect on transactions (Cave, 2005; Guerra and all, 2003).
- the managerial approach, where the focus is on strategies for consumers' persuasion and trust building (Cavoukian and Hamilton, 2002; Fogg, 2002).
- the human computer interaction approach, where the focus is on the relation between user interface engineering, the usability of a system and users' reactions (Riegelsberger and all, 2005, Lee and all, 2000).
- the sociology approach, where trust has been studied as an interpersonal and group phenomenon (Scot, 1980; Salovey and Rothman, 2003).

- the technological approach, where the focus is on the adoption of new technologies (Misztal, 1996; Fukuyama, 1995; Gambetta, 1988).

Table 1

Definitions of Trust

Source	Definition of Trust
Deutsch (1958)	An individual may be said to have trust in the occurrence of an event if he expects its occurrence and his expectation leads to behavior which he perceives to have greater negative motivational consequences if the expectation is not confirmed than positive motivational consequences if it is confirmed.
Rotter (1967)	Expectancy held by an individual or a group that the word, promise, verbal or written statement of another individual or group can be relied upon.
Lewis and Weigert (1985)	Trust exists in a social system insofar as the members of that system act according to and are secure in the expected futures constituted by the presence of each other or their symbolic representations.
Mayer et al. (1995)	The willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party.
Rousseau et al. (1998)	Trust is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another.
Grandison and Sloman (2000)	Trust is the firm belief in the competence of an entity to act dependably, securely, and reliably within a specified context
Mui et al. (2002)	Trust is a subjective expectation an agent has about another's future behavior based on the history of their encounters."
Olmedilla et al. (2005)	Trust of a party A to a party B for a service X is the measurable belief of A in that B behaves dependably for a specified period within a specified context (in relation to service X)

Empirical evidence shows that the level of trust does not necessarily develop gradually over time (Berg et al., 1995; Kramer, 1999). Trust building is a cumulative process where the level of trust in the earlier stages affects the level of trust in the later stages and impacts the development of longer-term trust relationships. In this context, there are several overlapping and consistent factors that impact the building of trust. These factors could be classified in two major categories:

- Preinteractional factors:
 - Individual behavioral attributes: individual demographics, culture, past experiences, propensity to trust, benevolence, credibility, competency, fairness, honesty, integrity, openness, general intention to use e-services.
 - Institutional attributes: organizational reputation, accreditation, innovativeness, general perceived trustworthiness of the organization.
 - Technology Attributes: interface design, public key encryption, integrity
- Interactional factors:
 - Service attributes: reliability, availability, quality, and usability.
 - Transactional delivery attributes: usability, security, accuracy, privacy, interactivity, quality.
 - Information content attributes: completeness, accuracy, currency, quality.

e-Government - Trust Relation

The modernization of the activities of governmental institutions, if is efficiently implemented, could be an important tool for radical institutional reform in the public and private sectors and for greater efficiency in the provision of public sector services (Skietrys , Raipa and Bartkus, 2008). So, in the last decade, governments around the world have been the working to capture the vast potential of information and communication technologies to improve government processes. New topics such as e-government, e-administration, e-democracy have become main subjects in the development of public sector delivery (Balockaite, Morkevicius, Vaidelyte and Zvaliauskas, 2008).

Broadly defined by World Bank (2000), e-Government refers to *“the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions”*.

The use on large scale of information and communication technologies has not only advantages, but also causes certain challenges (Davidaviciene, 2008). The success of the informatisation efforts depends, to a great extent, on how well the targeted users for such services, citizens in general, make use of them. Even e-Government brings a certain level of transparency and offers good scope for innovative ways of servicing, some people remain suspicious of IT use in relation with government. For example, a study conducted by Wauters and Lörincz (2008) showed that only about 124 millions of Europeans are e-Government engaged, and 86 millions of Europeans using the Internet regularly are non-users of e-Government services. Thus, these ratings suggest that nonusers haven't favorable attitudes towards the use of electronic services in relation with the governmental agencies. According to with Gatautis (2008), ICT can be used efficiently only if it is trusted. Enhancing take-up remains a policy challenge at a time when citizens and businesses expect the higher levels of quality and responsiveness from government services, streamlined administrative procedures and a government that takes their views and knowledge into account in public decision-making. Citizen characteristics need to be properly understood, before developing an effective e-Government adoption strategy.

Trust in e-government is an abstract concept that underlies a complex array of relationships, so the method used to quantify trust in e-government should therefore account for this abstract nature.

Citizens' trust, leading to adoption and use of e-Government systems, has two dimensions: trust on the governments and trust on Internet. Before trusting e-government initiatives, citizens must believe that government possesses the managerial and technical resources necessary to implement and secure these

systems. For adopting e-Government services, citizens must have intention to 'engage in e-Government' which encompasses the intentions to receive and provide information through on-line channels (Warkentin, Gefen, Pavlou and Rose, 2002).

Citizen confidence in the ability of an agency to provide online services is imperative for the widespread adoption of e-government initiatives. A low level of citizen's trust on the ability of government to implement e-Government initiatives coupled with a low level of citizen's trust on Internet will lead to a condition where the citizens are adversaries to technology as well as government. (Srivastava and Thomson, 2005). In this situation, lack of trust on both dimensions will lead to unfavorable outcomes as regards acceptance of e-Government initiatives. Such a situation is not conducive for the implementation or success of e-Government programs.

A low level of trust on the government coupled with a high level of trust on Internet leads to a situation where citizens might use technology as a competitive tool against the government (Eynon, 2007). Implementation of e-Government services in such situations will lead to unpredictable and sporadic results. In such a scenario, the citizens will view the e-Government initiatives with suspicion and cynicism.

A high level of trust on the government but a low level of trust on the Internet indicates a scenario where the citizens will try to cooperate with the government efforts but the lack of their trust on the technology will inhibit this cooperation. The Internet technologies are poorly understood by large numbers of people, even some of them are a ubiquitous part of daily life. How far the pervasiveness of the new technologies is generally understood is not clear. More particularly, bad personal experiences, and news of large-scale computerisation failures or inadequacies, may reinforce distrust or reduce a high level of trust in Internet and in the agencies that use them. Though the citizens cooperate with the government, they are not able to contribute to the e-Government initiatives (due to their lack of trust on technology) hence the full potential will not be realized.

A high level of trust on the government's ability, motivation and commitment for the e-Government programs coupled with a high level of trust on the enabling technologies leads to a synergy of the government and citizens. Warkentin, Gefen, Pavlou and Rose (2002) posit that trust in the agency has a strong impact on the adoption of a technology. This collaborative behavior leads to proactive effort by the citizens as well as government towards the success of e-Government programs.

Transition to electronic services for the public sector is more than a technical or organisational change, but involves ethical dimensions of state-citizen interaction in which, in a democracy, trust and consent are at least as important as legal authority. Alongside face-to-face and other interactions amongst mutually known actors, virtual transactions with strangers and abstract systems extend chains of (inter)dependence into new territory in which familiar ways of establishing trust are absent and the reliability of new mechanisms remains to be tested.

Determinants of trust in e-Government

As features of online communication could erode or enhance trust, it would be valuable to understand what factors, if any, can ensure that citizens place the appropriate level of trust in e-government.

Empirical evidence relating to the impact of various factors on trust in e-government is sparse and rarely. The most of existing studies have included trust in broader adoption models, such as the technology acceptance model and the diffusion of innovation theory (Belanger and Carter, 2008; Horst, Kuttschreuter and Gutteling, 2007; Warkentin et al., 2002). In these models, the most analysed determinants were trust of the Internet, trust on the government, perceived usefulness and perceived quality of the e-Government services.

In addition, the ITC literature on trust has emphasized the importance of the e-government services being perceived as secure (Tassabehji, Elliman and Mellor, 2007; Lee and Rao, 2007). In the Benchmarking Security and Trust in the EU and US report, Cremonini and Valeri (2003) found that individual concerns about security and confidence in services provided electronically, led to the lack of trust which was found to be a significant barrier to the adoption of e-government. Their survey revealed that for 74% of European Union citizens, awareness of security features of Web sites were important factors for deciding to transact online.

Propensity to trust is a characteristic that appears most frequently in research on trust on e-government (Belanger and Carter, 2008; Colesca, 2007). It seems that people who have more propensity to trust, in general, are more trusting in the e-government.

The findings of multiple research studies (Srivastava and Thomson, 2005; Parent, Vandebek and Gemino, 2004) indicate that online interaction with an organisation involves both the organisation itself, as well as a system which enables this interaction. Perceived organisational trustworthiness and trust in technology are, therefore, other two important determinants of trust in e-government. In the same context, Avgerou et al. (2006) have made a useful distinction between the types of citizen trust in e-government. The first focuses on the way in which ICT is associated with trust of citizens in government agencies for their service delivery; this is considered to be operating at the microlevel. The second concerns the potential contribution of such improved trust in government agencies and trust government in its broader political sense, that is, operating at the macro level.

Citizen's trust in e-government has some unique features because the impersonal nature of the online environment, the extensive use of technology, and the inherent uncertainty and risk of using an open infrastructure (Al-adawi and Morris, 2008). The online environment does not allow the natural benefits of face-to-face communications and to directly observe the service provider behavior, assurance mechanisms on which humans have depended on for ages. Based on trust, new service paradigms could emerge, developing passive citizen participation into active citizen participation in public service delivery (Hein van Duivenboden, 2002).

Research design

The purpose of the present research was to identify the determinants of trust in e-government in the Romanian context. Based on previous literature, a trust model has been developed (Figure 1). Twelve interrelated variables were identified as trust determinants and twelve hypotheses were formulated based on the research model. The aim was to test the hypotheses and determine the strength of the relationships.

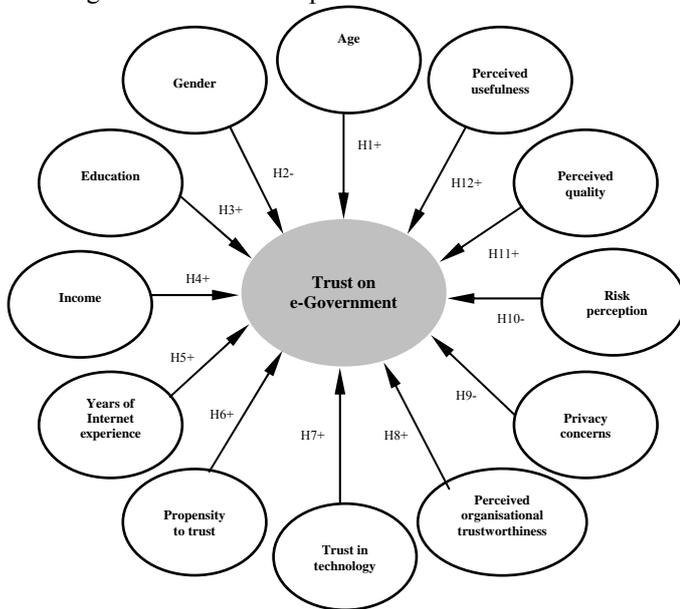


Figure 1. The research model

The following hypotheses were tested:

- H1:** Age will negatively influence the trust in e-Government services.
- H2:** Gender will influence the trust in e-Government services. Women will trust more than men.
- H3:** Education will positively influence the trust in e-Government services.
- H4:** Income will positively influence the trust in e-Government services.
- H5:** The years of Internet experience will positively influence the trust in e-Government services.
- H6:** Propensity to trust will positively influence the trust in e-Government services.
- H7:** The trust in technology will positively influence the trust in e-Government services.
- H8:** Perceived organizational trustworthiness will positively influence the trust in e-Government services.
- H9:** Privacy concerns will negatively influence the trust in e-Government services.
- H10:** Risk perception will negatively influence the trust in e-Government services.
- H11:** Perceived quality will positively influence the trust in e-Government services.
- H12:** Perceived usefulness will positively influence the trust in e-Government services.

Several specific criteria were used to measure the trust factors. Table 2 contains the list of items that were analyzed.

Methodology

To test the research model for this study a survey was conducted. A questionnaire was designed to gather the necessary information. Each item in the model had a corresponding question in the questionnaire. According to Lehmann and Hulbert (1972), “if the focus is on individual behavior, five to seven point scales should be used.” Accordingly, we have used a seven-point scale, each item of the questionnaire being measured on a Likert scale with end points of “strongly agree” (7) and “strongly disagree” (1).

The questionnaire was administered to 835 Romanian citizens older than 18 years, living in urban and rural areas, from all Romanian regions (8 regions), who responded that are Internet users. 814 responses were received. After eliminating incomplete responses, we selected 793 usable responses as the sample. The sample is representative for the Romanian population, with a 3.2 % maximum error at 95% confidence level.

Analysis of sociodemographic variables

As it has been showed in previous studies (Colesca and Dobrică, 2008), the Romanian citizens are interested in e-government opportunities. Even many Romanians are unfamiliar with the term “e-Government”, the public sees great potential in the government using technologies. The public’s vision of governmental use of technologies goes beyond a more efficient government that offers accessible high-quality services on-line, to a more informed and empowered citizenry and a more accountable government. In the same time the Romanians’ concerns are clear, and their familiarity still is relatively low. Concerning the use of e-Government services, 51.32 % (407 persons) of the respondents declared they have experienced these services at national or local level.

Table 2

Factors of trust in e-Government		
Sociodemographic factors		
Age (AG)	<25	
	25-40	
	41-60	
	>60	
Gender (GE)	Male	
	Female	
Education (ED)	Middle school or less	
	High school	
	College or more	
Income (IN)	< 200 Euro	
	201-400 Euro	
	401-600 Euro	
	601-1000 Euro	
	>1000 Euro	
Years of Internet experience (YI)	<3 years	
	3-10 years	
	>10 years	
Constructor	Item	
Propensity to trust (PT)	PT1	It is easy for me to trust a person/thing.
	PT2	My tendency to trust a person/thing is high.
	PT3	I tend to trust a person/thing, even though I have little knowledge of it.

Trust in Technology (TT)	TT1	I believe the technologies supporting the system are reliable all the time.
	TT2	I believe the technologies supporting the system are secure all the time.
	TT3	Overall, I have confidence in the technology used by government agencies to operate the e-government services.
Perceived organizational trustworthiness (POT)	POT1	I think I can trust government agencies.
	POT2	I trust government agencies keep my best interests in mind.
	POT3	In my opinion, government agencies are trustworthy.
	POT4	The trust in a governmental agency increase once with its reputation.
Privacy concerns (PC)	PC1	My personal information given to a governmental website may be shared with other government agents to whom I do not want to provide the information.
	PC2	The governmental websites may allow another party access to my personal information without my consent.
	PC3	My personal information may be used in an unintended way by the governmental agency.
	PC4	Someone can snatch my personal information while I'm sending the information to a governmental website.
	PC5	Hackers may be able to intrude governmental websites and steal my personal information stored on the web
Risk perception (RP)	RP1	I feel vulnerable when I interact with an e-government service.
	RP2	I believe that there could be negative consequences from using an e-government service.
	RP3	I feel it is unsafe to interact with an e-government service.
	RP4	I feel that the risks outweigh the benefits of using an e-government service.
	RP5	I feel I must be cautious when using an e-government service.
	RP6	It is risky to interact with an e-government service.
Perceived quality (PQ)	PQ1	Generally, the e-government services provide useful information.
	PQ2	Generally, the e-government services are effectively organized.
	PQ3	Generally, the e-government services provide significant user interaction.
	PQ4	Generally, the e-government services provide feedback mechanisms.
Perceived usefulness (PU)	PU1	Using e-government services can save my time, compared to dealing with real people for the same service.
	PU2	Using e-government services can improve the service quality that I will receive, compared to dealing with real people for the same service.
	PU3	Using e-government services increases the effectiveness in my transactions with the government.
	PU4	Overall, the e-government services are useful for my transactions with the government.
Trust on e-Government (TE)	TE1	I expect that e-government services will not take advantage of me.
	TE2	I believe that e-government services are trustworthy.
	TE3	I believe that e-government services will not act in a way that harms me.
	TE4	I trust e-government services.

Table 3 shows sociodemographic variables for the present study. The proportion between women and men is 1.13. Most of the respondents are between 25-40 years of age (34.17 %), have finished the high school (56.87 %),

work in the private sector (35.44 %), have a monthly income between 401 and 600 Euro (36.86 %) and have between 3 and 10 years of experience in Internet use (65.32 %).

Table 3

Demographic Profile of Respondents

Measure	Item	Frequency	Percentage
Gender	Female	372	53.09%
	Male	421	46.91%
Age	<25	92	11.60%
	25-45	271	34.17%
	45-65	243	30.64%
	>65	187	23.58%
Occupation	Private sector employee	281	35.44%
	State employee	247	31.15%
	Students	58	7.31%
	Unemployed	49	6.18%
	Retiree	158	19.92%
Education	Middle school or less	53	6.68%
	High school	451	56.87%
	College or more	289	36.44%
Income per month	< 200 Euro	124	13.52%
	201-400 Euro	298	32.50%
	401-600 Euro	338	36.86%
	601-1000 Euro	103	11.23%
	>1000 Euro	54	5.89%
Years of Internet use	<3 years	134	16.90%
	3-10 years	518	65.32%
	>10 years	141	17.78%

Asked which sites they visited most frequently, 34.99 % of e-government users said it was national Web sites and 65.01 % said it was local sites. The rest either said they frequented all types of sites equally or didn't know what sites they visited most.

In terms of experience level, the most common mentioned experience is searching for information (86.21%), followed by downloading forms (43.59 %). The percent of citizens that initiated an on line transaction with a public institution is very low (5.27 %). E-government users search a variety of items on government sites, including material about what public administration do, the facts that are contained in government databases and documents, information related to civic issues, and insights into the business climate or opportunities in various communities.

Data analysis

To verify how closely the survey measurements met the objectives of this study, before testing the proposed model, we performed a reliability analysis for the constructors composed by many items. Reliability is an assessment of the degree of consistency between multiple measurements of a variable. One type of diagnostic measure that is widely used and employed here is the Cronbach's alpha. The generally agreed upon lower limit for Cronbach's alpha is 0.70 (Nunnally, 1978). The results of the reliability analysis are presented in Table 4. As the table shows, the reliability analysis gave alpha coefficients exceeding 0.70, which are regarded as acceptable reliability coefficients. Hence, the results demonstrate that the questionnaire is a reliable measurement instrument.

Table 4

Reliability analysis

Construct (number of items)	Cronbach's Alpha
PT (3)	0.815
TT (3)	0.873
POT (4)	0.904
PC (5)	0.808
RP (6)	0.812
PQ (4)	0.859
PU (4)	0.931
TE (4)	0.889

To test the hypotheses we conducted multiple regression analysis. In Table 5, we summarize the findings regarding the research hypotheses. The analysis proved that 8 hypotheses are supported and 4 hypotheses aren't supported. Figure 2 is a graphical description of the analysis results.

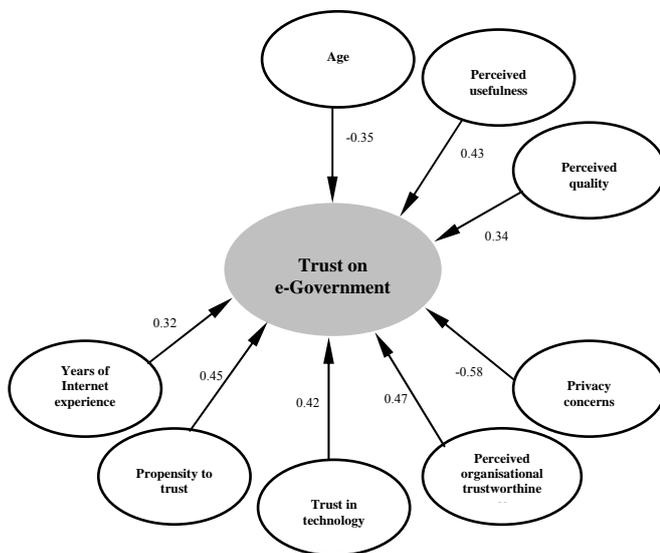


Figure 2. Graphical description of the results

Table 5

Hypotheses results

Hypotheses	Variable	β	Significance	Supported
H1	AG-TE	-0.35	0.2734	YES
H2	GE-TE	0.02	0.0120	NO
H3	ED-TE	0.09	0.0279	NO
H4	IN-TE	0.13	0.0040	NO
H5	YI-TE	0.32	0.4418	YES
H6	PT-TE	0.45	0.3159	YES
H7	TT-TE	0.42	0.2389	YES
H8	POT-TE	0.47	0.2612	YES
H9	PC-TE	-0.58	0.1443	YES
H10	RP-TE	-0.29	0.0359	NO
H11	PQ-TE	0.34	0.4975	YES
H12	PU-TE	0.41	0.3907	YES

Discussions

The study confirms many of the hypotheses proposed in the model. Privacy concerns (H9, $\beta=-0.58$) was found to have the greatest influence on trust in e-Government. Individuals want to be able to release personal information in the confident belief that it will only be used in the way

the individual intended. Providing this assurance is the key to demonstrating trustworthiness. This finding is important because it provides useful strategic implications for the implementation of e-government services in the future. To adopt e-Government processes, citizens must have the intention to "engage in e-Government", which encompasses the intentions to receive information, to provide information, and to request e-Government services. Without confidence in the e-Government services, processes, procedures, and other aspects of government, the vision of fully electronic service delivery will remain a challenging target. The survey found that 70 percent of the Romanians is extremely concerned about hackers breaking into government computers. Given the potential of e-Government to help restore public confidence, it is all the more imperative that public concerns with respect to privacy and security are thoroughly examined and addressed in the move to e-Government. Ease of use and the reliability of technical infrastructure could be two keys for the public's ability to use it. Another will be broad public confidence in government's ability to keep personal information private and to make systems safe from inappropriate efforts to gain access.

The analysis of the sociodemographic variables proves that age has a significant influence (H1, $\beta=-0.35$) on e-government trust. The β value for Age is negative, meaning that younger respondents are more likely to trust e-government services than the elders. Younger respondents tend to be more open to the idea of using e-government services than older respondents. This finding is consistent with previous research in e-government area, which found that age has statistically significant effects on the decision to adopt e-Government.

Opposite with a previous Romanian research in e-government adoption (Colesca and Dobrică, 2008), which showed that e-government services are most accessible to more highly educated people, the present study proved that the education level (H3) hasn't any influence over the trust in e-government. Perhaps, individuals with more formal education tend to be somewhat more skeptical of the information and people accessible on the Internet.

People with different life experiences, personality types and cultural backgrounds vary in their propensity to trust. In concordance with other studies (Mayer and all, 1995), the present research highlights a positive relation between propensity to trust and e-Government trust (H6, $\beta=0.45$). On the other hand, the study fails to attest the importance of gender (H2) and income (H4) in influencing trust in e-government.

Internet experience appears to have influence over trust (H5, $\beta=0.32$). As the frequency of access and use of the Internet increases so will increase the understanding about existing and potential uses of the technology for information dissemination, online transactions, and interactive communication. In fact, the risks experienced in using the Internet are most often less than the risks imagined by non-users. As people use the Internet and gain expertise and capabilities and gain greater access to Internet resources, they are also likely to be less concerned over the risks of Internet use. And as consequence of risk reduction trust will increase.

The study shows empirical evidence that perceived organizational trustworthiness (H8, $\beta=0.47$) and trust in technology (H7, $\beta=0.42$) are statistically significant factors influencing users' trust in e-Government. This highlights the importance of citizens' trust in both the government agency and the technology used to provide electronic services. Hence, government agencies should first emphasize their general competence in their particular areas of expertise, and then highlight their ability to provide their services via the Internet. Citizen distrust can arise when governmental agencies are perceived to systematically use or block use of technology in ways that misinterpret or misrepresent expected cultural, political, or social norms.

Trust is a method of dealing with uncertainty. Following this, risk is inherent in trust. Although, the model hasn't revealed any relation between perceived risk and trust in e-Government (H10). This outcome was amazing because in other fields, for example in e-commerce, there is a strong relation between trust and risk perception. One explication for this result could be the small percent of citizens who initiated an on line transaction with a public institution (5.27%). The risk associated with finding information and downloading forms is reduced in these circumstances. Another reason could be the fact that citizens perceive businesses differently than government (Belanger and Carter, 2008). Perhaps the perception of risk in e-commerce is more prevalent than in e-government. Or, perhaps different trust constructs impact risk in e-Government. Future research should address these potential differences.

The analysis of the model revealed that the citizen's higher perception of quality (H11, $\beta=0.34$) and usefulness (H12, $\beta=0.41$) enhanced the level of trust in e-Government. A well-designed and high quality system can provide citizens with a signal that the e-service operator has the competence to carry out online services. Therefore, e-Government websites should not only be designed as pure technological artifacts with functional properties but they must also incorporate sociological elements that cater to customers' social needs.

Conclusions

Governments around the world are incorporating more and more information and communication technologies tools into their government activities. The use of these tools has resulted in the adoption of many e-Government visions and strategies. In order to be properly understood and applied, e-government and its' determinants need to be more comprehensively analyzed.

Trust is probably one of the most important aspects in the implementation of e-Government strategies. In order for e-Government to achieve its ambitious objectives of being able to develop and deliver high quality and integrated public services, citizens need to trust the e-Government process. Without trust, citizens will not participate in e-Government. If people don't believe that their points of view are being seriously considered, then their future participation will be lost for a very long time. As a result, government will have to make tremendous efforts to regain that trust.

This study provides an understanding of the determinants of trust in e-Government. Our findings seem to support those of Horst, Kuttschreuter and Gutteling (2007), Warkentin, et al. (2002) and Mayer, et al (1995). The analysis revealed that the citizen's higher perception of technological and organizational trustworthiness, the quality and usefulness of e-Government services, the Internet experience and propensity to trust, directly enhanced the trust in e-Government. Opposite, age and privacy concerns have a negative influence over trust. By manipulating these determinants state agencies should promote citizen acceptance and use e-Government services. For an effective adoption of the e-Government services, widespread and attractive awareness campaigns should be conducted, targeting potential users properly to inform them about the real benefits they would gained.

Future research is needed to determine if there are additional trust determinants unique to e-Government adoption. For example, given the fact that 51.32% of the respondents had experienced e-government services, it would be interesting to compare their perceptions of trust to their actual use of e-services.

This research article makes the following contributions to knowledge within the area of trust in e-government. Firstly, the research emphasized both theoretical and empirical literature on the important determinants of trust in e-Government. The trust perspective, used as a theoretical frame for understanding this case, emphasizes the importance of fostering and developing, citizen trust, for successful e-Government acceptance and adoption. Secondly, this study empirically examined the role of twelve different determinants to investigate whether the effect of such factors upon trust in e-government is consistent with the findings of other studies in the field. The findings are then discussed in the light of the synthesized literature presented in the previous sections, which clearly suggests that this study makes incremental and useful contributions to existing knowledge within the area.

Before drawing definitive conclusion from these results, it is important to consider the study's limitations. This research was conducted in the Romanian context, so the analysis is based on the perception of the Romanian citizens. The limitation of the study to one country bears the danger that the findings are context-specific because citizen's behavior differs from country to country. Another limitation is that the questionnaire approach is not free of the respondent's subjectivity in and was taken at one point in time. User reactions change in time and may depend on the environment.

This paper contributes to the trust literature in general and to e-government policy development in particular. In today's Information Age trust in e-Government is a very important issue which is widely addressed.

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Pasitikėjimo E.vyriausybe suvokimas

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Santrauka

Per pastarąjį dešimtmetį viso pasaulio vyriausybės stengėsi suvokti didžiules interneto galimybes gerinant vyriausybės veiklą. Tačiau šių pastangų sėkmė priklauso nuo to, kaip šių pastangų vartotojai pasinaudoja jomis. E.vyriausybė žmonėms suteikia tam tikro lygio aiškumą ir siūlo daug naujų patarnavimo būdų, tačiau kai kurie žmonės nepasitiki jų nauda vyriausybės veikloje.

Pasitikėjimas yra abstrakti sąvoka, kuri pabrėžia visą santykių visumą todėl ir metodas, kuris naudojamas E.vyriausybės patikimumui nustatyti, turėtų remtis šia abstrakčia sąvokos prigimtimi. Šiame kontekste pirmojoje straipsnio dalyje pateiktos pagrindinio tyrimo išvados patikimumo srityje.

Piliečių pasitikėjimas skatinantis į e.vyriausybės sistemų įdiegimą ir panaudojimą turi du matmenis: pasitikėjimą vyriausybe ir pasitikėjimą internetu. Prieš pradėdami pasikliauti e.vyriausybės iniciatyvomis, piliečiai turi patikėti vyriausybės vadovavimo ir techniniais resursais, reikalingais šioms sistemoms įdiegti ir joms veikti. Norint įdiegti e.vyriausybės pastangas, piliečiai turi būti linkę įsitraukti į e.vyriausybės veiklą, kuri būtų vykdoma kompiuteriniais kanalais.

Šio tyrimo tikslas buvo nustatyti e.vyriausybės pagrindinius veiksnius. Remiantis ankstesne literatūra, buvo sukurtas patikimumo modelis. Buvo nustatyta dvylika susijusių kintamųjų, kurie laikomi patikimumo veiksniais (amžius, giminė, išsilavinimas, pajamos, patyrimas naudojantis internetu, polinkis į pasitikėjimą, pasitikėjimas technologijomis, suvoktas organizacinis pasitikėjimas, privatumo problemos, rizikos supratimas, suvokiama kokybė, suvoktas naudingumas). Remiantis tyrimo modeliu buvo suformuluota dvylika hipotezių. Tiriant modelį, buvo atlikta tam tikra patikra. Reikėjo išbandyti hipotezes ir nustatyti santykių tvirtumą. Reikiamai informacijai surinkti buvo sukurta anketa.

Anketa buvo išdalyta 835 Rumunijos piliečiams (vyresniems negu 18 metų), gyvenantiems įvairių Rumunijos rajonų miestuose ir užmiesčiuose. Buvo gauta 814 atsakymų. Atmetus nepilnus atsakymus, buvo atrinkta 793 atsakymai. Tyrimas patvirtinimo daugumą iškeltų hipotezių. Pasirodė, kad privatumo problemos turėjo didžiausią poveikį e.vyriausybės patikimumui. Žmonės nori perduoti asmenišką informaciją tikėdamiesi, kad ji bus panaudota tik taip, kaip jie nori. Privatumo užtikrinimas yra pagrindinis veiksnys, užtikrinantis patikimumą. Šis teiginys yra svarbus, nes jis suteikia strateginius svirtus įgyvendinant e.vyriausybės paslaugas. Diegiant e.vyriausybės sistemą piliečiai turi pasitikėti šia paslauga tiek gaudami, tiek teikdami informaciją. Nepasitikint e.vyriausybės paslaugomis, procesais, procedūromis ir kitais vyriausybės aspektais, elektroninės paslaugos negali būti visiškai įgyvendintos. Tyrimas parodė, kad 70 % Rumunijos gyventojų yra susirūpinę dėl įsilaužimų į vyriausybės kompiuterius. Reikalinga, kad gyventojų pasitikėjimas e.vyriausybės paslaugomis būtų užtikrintas. Pasinaudojimo lengvumas ir techninės infrastruktūros patikimumas yra svarbiausi veiksniai, kurie lemia visuomenės norą naudotis elektrone paslauga. Svarbus yra pasitikėjimas vyriausybės gebėjimu išlaikyti informacijos privatumą ir technikos patikimumą.

Socialinių demografinių kintamųjų analizė rodo, kad amžius turi didelę įtaką e.vyriausybės patikimumui. Dydis β – amžius yra neigiamas ir rodo, kad jaunesni respondentai yra labiau linkę pasitikėti e.vyriausybės paslaugomis negu vyresni respondentai. Jaunesni respondentai yra atviresni e.vyriausybės idėjai. Šis rezultatas sutampa su ankstesniu tyrimu, kuriuo buvo nustatyta, kad amžius daro poveikį sprendimui pasinaudoti e.vyriausybės paslaugomis.

Ankstesnis tyrimas parodė, kad e.vyriausybės paslaugos yra prieinamesnės labai išsilavinusiems žmonėms. Šis tyrimas parodė, kad išsilavinimas neturi jokios įtakos pasitikėjimo e.vyriausybės paslaugomis lygiui. Asmenys, kurie yra gavę formalų išsilavinimą, yra skeptiškesni, kad būtų taikoma paslauga.

Žmonės, besiskirstantys savo gyvenimo patirtimi ir kultūros lygiui skiriasi savo polinkiu į šių paslaugų patikimumą. Palyginti su kitais tyrimais, ši analizė rodo teigiamą santykį tarp polinkio tikėti ir e.vyriausybės patikimumo. Kita vertus, šis tyrimas neparodo giminės ir pajamų svarbos e.vyriausybės patikimumui.

Internetinė patirtis, turi įtakos pasitikėjimui. Naudojant internetą labiau suvokiama, kad technologijos reikalingos informacijos skaidoje ir interaktyvioje komunikacijoje. Be abejo, interneto naudojimo rizika yra mažesnė nei rizika nesinaudojant juo. Žmonės, naudojantys internetą įgyja patirtį ir mažiau susiduria su rizika.

Mažėjant rizikos veiksniams, didėja patikimumas. Tyrimas rodo, kad organizacinis patikimumas ir pasitikėjimas technologijomis yra svarbūs veiksniai, kurie daro įtaką pasitikėjimui e.vyriausybės. Tai paaiškina piliečių pasitikėjimą tiek vyriausybės agentūromis, tiek technologijomis, kurios aprūpina elektroninėmis paslaugomis. Taigi vyriausybės įstaigos pirmiausia turėtų pabrėžti savo kompetenciją tam tikrose srityse, o tada paaiškinti, kad gali tiekti paslaugas internetu. Piliečių nepasitikėjimas gali kilti tada, kai vyriausybės agentūros nuolat blokuoja technologijų panaudojimą, kuris peržengia kultūrinės, politinės ir socialines normas.

Pasitikėjimas yra svarbiausias metodas netikrumui įveikti. Taigi rizika yra būdinga pasitikėjimui. Nors modelis neatskleidė santykio tarp suvoktos rizikos ir pasitikėjimo e.vyriausybe, rezultatas buvo stebintis, nes kitose srityse, pvz. e.komercijoje, yra stipri priklausomybė tarp pasitikėjimo ir rizikos suvokimo. Esant tokioms sąlygoms, susijusi su informacijos radimu ir duomenų pardavimu iš didesnės kompiuterinės sistemos į mažesnę, sumažėja. Kita priežastis – piliečiai suvokia verslą kitaip negu vyriausybę. Galbūt rizika suvokiama e.komercijoje dažniau nei e.vyriausybėje. O gal įvairūs pasitikėjimo lygiai veikia riziką e.vyriausybės paslaugose. Būsimieji tyrimai galėtų šiuos skirtumus leisti.

Šio modelio analizė atskleidė, kad dėl piliečių supratimo apie kokybę ir naudą padidėja pasitikėjimas e.vyriausybe. Dėl gerai sudarytų ir kokybiškų sistemų piliečiai gali įsitikinti, kad jos pajėgios atlikti paslaugas. Todėl e.vyriausybės svetainės turi būti ne tik savo technologiškai pranašesnės, bet ir pasižymi ir socialiniais veiksniais.

Svarbu atkreipti dėmesį ir į tai, kad tyrimas ribotas. Šio tyrimo analizė remiasi tik Rumunijos piliečių svarstymais. Tyrimų rezultatai, gauti tik vienoje šalyje, yra riboti, nes piliečių elgesys kitose šalyse gali skirtis. Dar vienas aspektas, kad anketinė apklausa gana subjektyvi. Vartotojų reakcija kinta, atsižvelgiant į laiko ir aplinkos pasikeitimą.

Raktažodžiai: *informacinės technologijos, pasitikėjimo faktoriai, pasitikėjimas, e-vyriausybė.*

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