# INCREASING E-TRUST: A SOLUTION TO MINIMIZE RISK IN E-GOVERNMENT ADOPTION

**Sofia Elena COLESCA**[1]
PhD, University Professor, Research Centre in Public Administration and Public Services, University of Economics, Bucharest, Romania

**E-mail:** sofiac@man.ase.ro

**Abstract:** *In the last decade, governments around the world have been working to capture the vast potential of the Internet to improve government processes. However, the success of these 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 this reason, the purpose of the presented study was to identify what factors could affect the citizens' trust in e government services. The study was conducted by surveying 793 citizens from all Romanian regions. The findings indicate 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. Opposite, age and privacy concerns have a negative influence over trust.*

**Key words:** *trust; e-government; information technologies; trusting factors*

## Introduction

Since the mid 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 began 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 unconfidence in applications of eGovernment that might pose risks, such as through unwarranted access to sensitive personal information or vulnerability to online fraud or identity theft (Eynon, 2007). Such concerns can be a major impediment to the take-up of eGovernment services. This can be 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.

For example, a study conducted by Wauters and Lörincz (2008) showed that only about 124 millions Europeans are eGovernment engaged, and 86 millions of Europeans using the Internet regularly are non-users of eGovernment services. Overall, these ratings suggest that nonusers haven't favorable attitudes towards the use of electronic services in relation with the governamental agencies. 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

Many studies focused the citizen adoption of e-government services suggest that trust (Srivastava and Thompson, 2005), security (Colesca, 2007) and transparency (Marche and McNiven, 2003) are the major issues for e-government adoption. In the present article our attention was directed on the relation between trust and e-government. To fulfill this aim, an exploratory survey on 793 citizens from all Romanian regions was undertaken with the goal to identify what factors could affect the citizens' trust in e-government services.

## 2. The concept of trust

Trust appeared once with the humanity and the development of social interaction. Almost every aspect of a person life is based in 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 a risk for the truster (Bouckaert and Van de Walle, 2001). As Baier (1986) 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 possible 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 definition and operationalization of this concept (Emurian and 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 of 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).

**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) |

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 the new tecnologies (Misztal, 1996; Fukuyama, 1995; Gambetta, 1988).

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:

1. **Preinteractional factors:**
   a. Individual behavioral attributes: individual demographics, culture, past experiences, propensity to trust, benevolence, credibility, competency, fairness, honesty, integrity, openness, general intention to use e-services
   b. Institutional attributes: organizational reputation, accreditation, innovativeness, general perceived trustworthiness of the organization
   c. Technology Attributes: interface design, public key encryption, integrity
2. **Interactional factors:**
   a. Service attributes: reliability, availability, quality, and usability

b. Transactional delivery atributes: usability, security, accuracy, privacy, interactivity, quality
c. Information content attributes: completeness, accuracy, currency, quality.

## 3. E-Government - Trust Relation

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.

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)

## 4. Research design

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. So, the purpose of the present research was to identify the determinants of trust in e-government. 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.

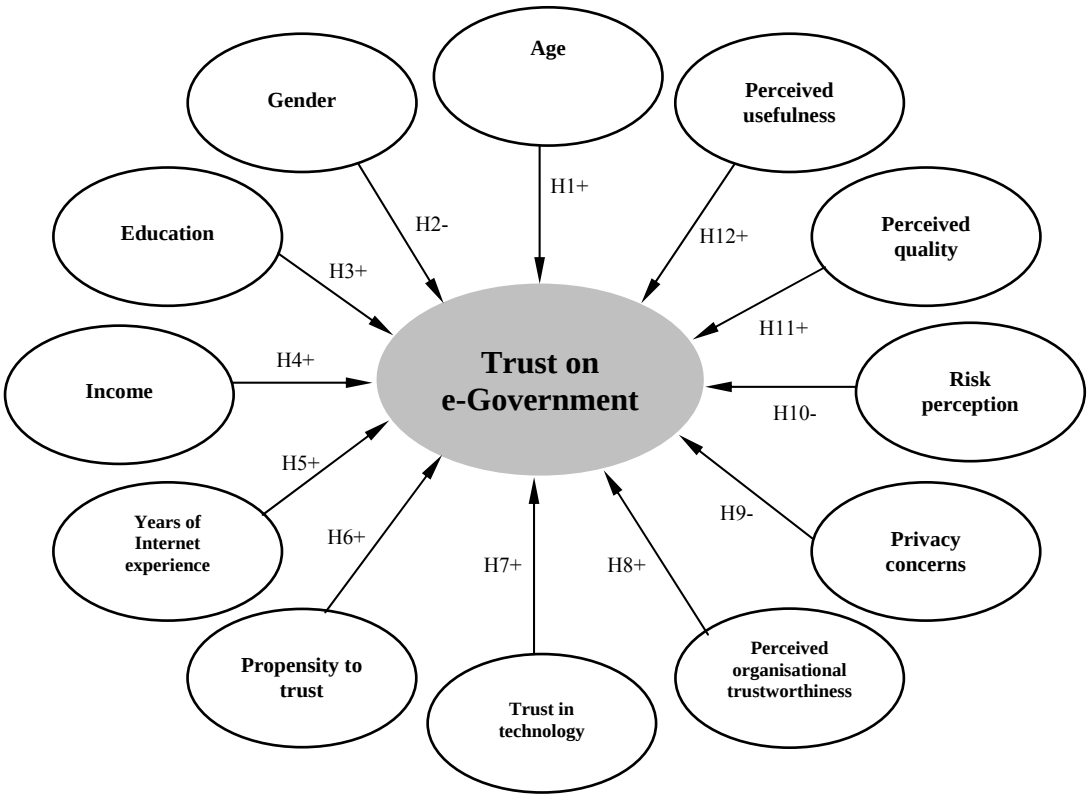


**Figure 1**. The research model

The following hypothesis were tested:

**H1:** The age will negatively influence the trust in e-government services.
**H2:** The gender will influence the trust in e-government services. Women will trust more than mans.
**H3:** The education will positively influence the trust in e-government services.
**H4:** The 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:** The 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:** The perceived organizational trustworthiness will positively influence the trust in e-government services.
**H9:** The privacy concerns will negatively influence the trust in e-government services.
**H10:** The risk perception will negatively influence the trust in e-government services.
**H11:** The perceived quality will positively influence the trust in e-government services.
**H12:** The perceived usefulness will positively influence the trust in e-government services.

Several specific criteria were used to measure the trust factors. Appendix 1 contains the list of items that were analyzed.

## 5. 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.

## 6. Analysis of sociodemographic variables

As showed in previous studies (Colesca and Dobrica, 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.

Appendix 2 shows the almost of the 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 an monthly income between 401 and 600 Euro (36.86%) and have between 3 and 10 years of experience in Internet use (65.32%).

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.

## 7. 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 (Nunnaly, 1978). The results of the reliability analysis are presented in Table 2. As the table shows, the reliability analysis gave alpha coefficients exceeding .70, which are regarded as acceptable reliability coefficients. Hence, the results demonstrate that the questionnaire is a reliable measurement instrument.

**Table 2** – 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 3, 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.

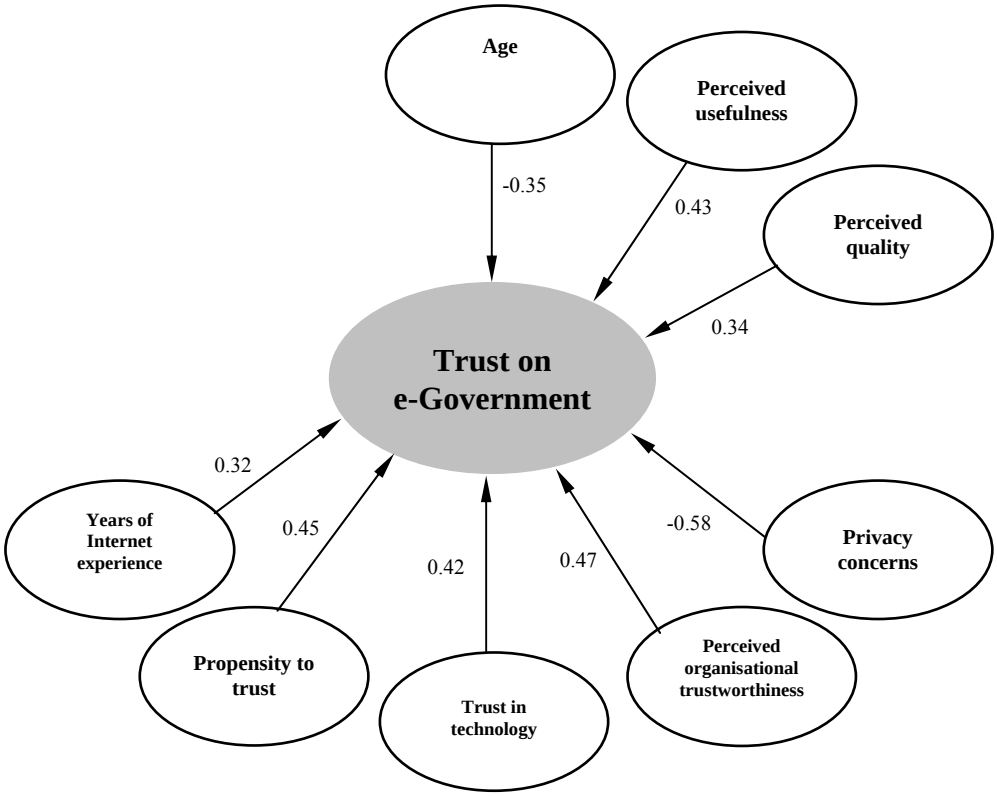


**Figure 2.** Graphical description of the results

**Table 3** - 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 |

## 8. 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 $\beta$ 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 another 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 to citizens 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.

## 9. Conclusions

This study provides an understanding of the determinants of trust in e-government. 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.

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 between countries. Another limitation is that the questionnaire approach is not free of subjectivity in the respondent and was taken at one point in time. User reactions change in time and may depend on the environment.

## References

1. AlAwadhi, S. and Morris A. **The Use of the UTAUT Model in the Adoption of E-government Services in Kuwait**, In Proceedings of the 41st Hawaii International Conference on System Sciences, 2008, pp. 1-11
2. Baier, A. C. **Trust and Antitrust**, Ethics 96, 1986, pp. 231-260
3. Belanger, A. and Carter, L. **Trust and risk in e-government adoption**, Journal of Strategic Information Systems 17, 2008, pp. 165–176
4. Berg, J., Dickhaut, J. and McCabe, K. **Trust, reciprocity and social history,** Games and Economic Behavior, 10, 1995, pp. 122-142
5. Bouckaert, G. and Van de Walle, S. **Government Performance and Trust in Government. Paper for the Permanent Study Group of Productivity and Quality in the Public Sector**, EGPA Annual Conference, Vaasa, Finland, 5–8 September, 2001
6. Cave, J. **The economics of cyber trust between cyber partners,** in Mansell, R. and Collins, B.S. (eds.) "Trust and Crime in Information Societies", pp. 380–427, Cheltenham: Edward Elgar, 2005
7. Cavoukian, A. and Hamilton, T. **The Privacy Payoff. HowSuccessful Business Build Consumer Trust**, McGraw-HillRyerson Trade, 2002
8. Colesca, S. **The main factors of on-line trust**, Economia. Seria Management, ASE Publishing House, vol. 10, no.2, 2007, pp. 27-37
9. Colesca, S. and Dobrica, L. **Adoption and use of e-government services: the case of Romania**, Journal of Applied Research and Technology, Universidad Nacional Autonoma Mexico, Vol. 6, No. 3, 2008, pp. 204-217
10. Deutsch, M. **Trust and suspicion**, Journal of Conflict Resolution, 2, 1958, pp. 265-279
11. Eynon, R. **Breaking Barriers to eGovernment: Overcoming Obstacles to Improving European Public Services,** European Commission, Brussels, 2007
12. Fogg, B. **Persuasive Technology: Using Computers to Change What We Think and Do**, Morgan Kaufmann, 2002
13. Fukuyama, F. **Trust: The Social Virtues and the Creation of Prosperity**, Harmondsworth, Penguin Books, 1995
14. Gambetta, D. **Trust: making and breaking cooperative relations**, Oxford, Basil Blackwell, 1988
15. Grandison, T. and Sloman, M. **A Survey of Trust in Internet Applications**, IEEE Communications Survey and Tutorials, 3, 2000
16. Guerra, G. A., Zizzo, D. J., Dutton, W. H. and Peltu, M. **Economics of Trust in the Information Economy: Issues of Identity, Privacy and Security. Technical report**, Oxford Internet Institute, Research Report No. 1, 2003
17. Johnson, D. S. and Grayson, K. **Cognitive and Affective Trust in Service Relationships**, Journal of Business Research, 58(4), 2005, pp. 500-507
18. Kramer, R. **Trust and distrust in organizations: emerging perspectives, enduring questions**, Annual Review of Psychology. v50, 1999, pp. 569-598
19. Lee, J., Kim, J. and Moon, J. Y. **What makes internet usersvisit cyber stores again? Key design factors for customer loyalty**. in "CHI '00: Proceedings of the SIGCHI conference on Human factors in computing systems", pp 305–312, NewYork, ACM Press, 2000
20. Lehmann, D. and Hulbert, J. **Are Three-point Scales Always Good Enough?,** Journal of Marketing Research, 9(4), 1972, pp. 444-446
21. Lewis, J. D. and Weigert, A. **Trust as a Social Reality**, Social Forces 63, 1985, pp. 967-985
22. Marche, S. and McNiven, J. **E-Government and E-Governance: The future isn't what it used to be**, Canadian Journal of Administrative Sciences, Vol. 20, No. 1, 2003, pp. 74–86

23. Mayer, R. C., Davis J. H. and Schoorman, D. F. **An integrative model of organizational trust**, The Academy of Management Review, 3, 1995, pp. 709–734
24. Misztal, B. A. **Trust in Modern Societies**, Cambridge, The Polity Press, 1996
25. Mui, L., Mohtashemi, M. and Halberstadt, A. **A computationalmodel of trust and reputation**, in "Proceedings of the35th Hawaii International Conference on System Sciences", 2002, pp. 2431- 2439
26. Nunnaly, J. **Psychometric theory**, New York: McGraw-Hill, 1978
27. Olmedilla, D., Rana, O., Matthews, B. and Nejdl, W. **Security and trust issues in semantic grids**, in "Proceedings of the Dagsthul Seminar, Semantic Grid: The Convergence of Technologies", volume 05271, 2005
28. Riegelsberger, J., Sasse, M. A. and McCarthy, J. D. **The Mechanics of Trust: A Framework for Research and Design**, International Journal of Human-Computer Studies, 62(3), 2005, pp. 381–422
29. Rotter, J. B. **A New Scale for the Measurement of Interpersonal Trust**, Journal of Personality, 35, 1967, pp. 651-665
30. Rousseau, D., Sitkin, S., Burt, R and Camerer, C. **Not so different after all: a cross discipline view of trust,** Academy of Management Review 23 (3), 1998, pp. 393 – 404
31. Salovey, P. and Rothman, A. **Social Psychology of Health**, Psychology press, 2003
32. Scott, C. L. **Interpersonal trust: A comparison of attitudinaland situational factors**, Human Relations, 33(11), 1980, pp. 805–812
33. Srivastava, S.C. and Thompson, S. H. **Citizen Trust Development for E-Government Adoption: Case of Singapore**, In "Proocedings of Pacific Asia Conference on Information Systems", 2005, pp. 721-724
34. Wang, Y. D. and Emurian, H. H. **An overview of on-line trust: Concepts, elements and implications**, Computers in Human Behavior, Vol. 21, 2005, pp. 105-125
35. Warkentin, M., Gefen, D., Pavlou, P. A**.** and Rose, G. **Encouraging Citizen Adoption of eGovernment by Building Trust**, Electronic Markets, 12(3), 2002, pp. 157-162
36. Wauters, P. and Lörincz, B. **User satisfaction and administrative simplification within the perspective of eGovernment impact: Two faces of the same coin?**, European Journal of ePractice, no. 4, 2008, pp.1-10

[1] Colesca Sofia received in 1991 the B.E. degree in Automation and Control at University Politehnica of Bucharest and in 2000 the Ph. D. degree in Management from the Academy of Economic Studies, Bucharest, Romania. Presently she is the director of the Research Centre for Public Administration and Public Services. Since 2007 she has worked as full professor, teaching subjects related to information technology. Her research interests include e government and management of information systems. She has published several journal and conference technical papers.

## Appendix 1.

Factors of trust in e-government

| **Sociodemografic 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. |

**Appendix 2**.

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% |