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Original Scientific Paper

Intention to Use and Variables Influencing Intention to Use Electronic Government Services Among Citizens

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Abstract

Each organization should be aiming at higher efficiency. Government institutions should not make an exception. Business processes of today's government institutions are extremely influenced by modern ICT and user acceptance plays a pivotal role in success of all ICT projects. As government tends to design and launch online services without actually measuring citizens' needs, understanding citizens' (taxpayers') needs is becoming crucial for government institutions. In this paper, a range of earlier studies have been critically analyzed and compared to provide an integrated model that can identify factors which could influence adoption of e-government services. The goal of this article is to study citizens' demand for different levels of electronic government service and to find factors which influence the adoption of these same services. This study integrates variables from technology acceptance model (TAM) and trustworthiness model. Analysis of the results indicates that there is a significant positive relationship between Trust in Internet, Perceived usefulness, Perceived ease of use and the Intention to use. Implications for further research are discussed.
Keywords: E-government, intention to use, TAM, trustworthiness model, service adoption

1. Introduction

The business world has already recognized benefits of electronic communication with government institutions. Financial savings or, sometimes more important, time savings have had an influence on the companies to intensify their use of e-government services. An increasing number of citizens using ICT and citizens adopting electronic services in commercial sector (e-commerce) exert pressure on government institutions to offer services to citizens similar to services in commercial sector. The government sector has digitalized most of its public services. Today, more than ever before, the government communicates with citizens through electronic channels which are becoming more and more complex. With the increase of service complexity level which government offers, the risk is also becoming higher. This risk is the resultant of two items: a) information is sent electronically and b) information is kept electronically. These facts indicate the possibility that information could be intercepted, read and modified by third parties.

Based on the aforementioned, every citizen will have to make a decision about adopting new services which electronic government offers and weigh up the benefits and risks which this offer brings. The aim of this research is focused on finding determinants which influence the intent to adopt e-government services.

The authors begin by presenting a research problem and the literature review. A detailed analysis is shown in the analysis section. The main research results and conclusions are presented at the end of the paper. In this article, we used citizens of Croatia as a case study

group. In our opinion, there is no reason why these results could not be extrapolated to countries with similar socio-economic and culture characteristics. Concerning practical implications, the findings are useful for policy makers and decision makers to develop a better understanding of citizens' needs. The paper made a contribution to the study of adoption of e-government services by applying a model which joins TAM and Trustworthiness model. This study is one of the few to examine what influences citizens adoption of e-government services.

2. Understanding the research problem

Research focus of this article is on the classical problem of demand and supply (in our case, demand and supply of electronic government services). Namely, research on demand and supply of electronic commerce services is today a common thing. But in the field of e-government this kind of research is practically unknown. Therefore, we have a situation where citizens' needs for e-government services exist, however the structure of these needs is unknown. The question is does citizens' need for high level e-government services even exist? Or should development of e-government be focused on high quality low level services? The research in this article is not only about finding the demand structure for e-government services, but also about finding factors which influence the adoption of e-government services.

The diagram presented on Figure 1. shows countries grouped by the level of service sophistication that is offered to citizens and the level of actual use of services. It is clearly visible that countries generally provide e-government services, but also that citizens do not use them often [24].

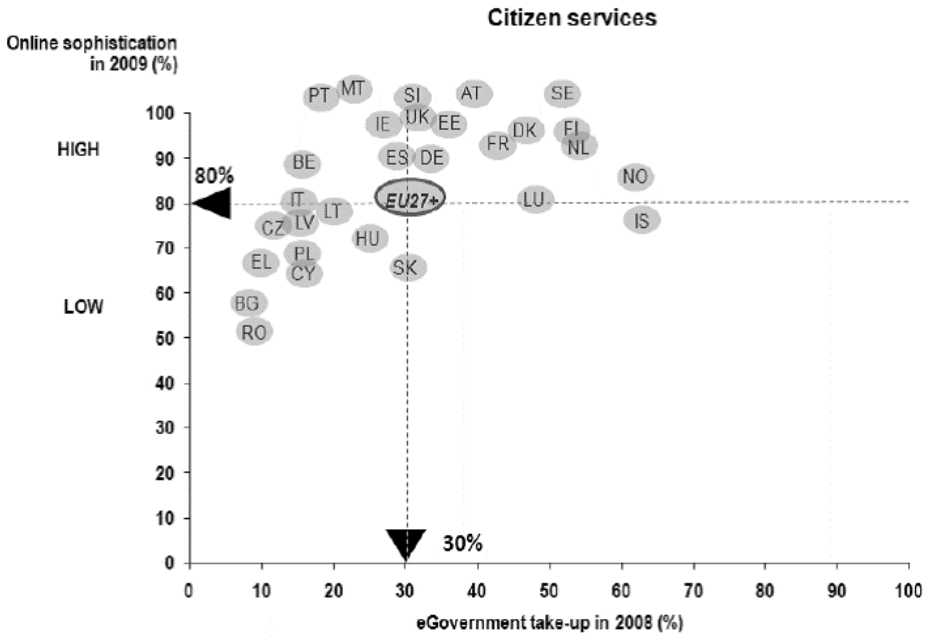

Figure 1. Disparity of supply and the actual use of e-government services (source: [24])

It is important to emphasize that this is not a research about the quality of e-government services (which is also very important). In essence, this research is about citizens' demand for electronic government services of different sophistication levels as well as about determining variables which affect citizens' demand for electronic government services.

3. Literature review

Today, it is hard to imagine a modern and competitive state without the large number of e-government services. We could intuitively recognize an indirect link between the development of economy and the level of sophistication of e-government services. In a globalized world, the flow of foreign capital greatly depends on the degree of development of the state administration in a particular country. In developing countries, we have often witnessed a lack of foreign investments due to slow or too complicated government processes. Moreover, e-government potentially offers many opportunities for the improvement of quality of life of citizens and advanced services for companies. Citizens and companies must be able to obtain service or information from government institutions in minutes or hours, not in days or weeks [23].

Having in mind all of the above mentioned, in our opinion, the research about e-government service demand is of great economic and social benefit. In addition to that, measuring what actually increases citizens' willingness to adopt these same e-government services is also necessary. This kind of research is recognized by many authors.

Featherman and Pavlou (2003) conducted a research about measures of negative utility (potential losses) attributable to the e-service adoption [11]. Authors recognized seven risk components (for example, privacy risk).

Carter and Belanger (2003) conducted an important research about the link between the benefits of using e-government services and the intention to adopt e-government services [9]. In their research, it was empirically proven that several adoption factors including relative advantage were significant in predicting citizens' intentions to use e-government services. Authors concluded that, as government institutions continued to invest in the e-government development, it was an imperative for institutions to enhance their understanding of factors that influenced citizens' utilization of electronic government resources (for example, driver license renewal could be done much faster and easier online than the traditional way).

Two years later, Carter and Belanger (2005) concluded in the research paper that, although there was a significant increase in e-government field (the USA provided in budget 2.33 billion dollars for e-government development for that year), it could not have been claimed that citizens would adopt services developed through those initiatives [10]. The authors used an integrated model for their research built on the basis of three well-known theoretical models for studying the technology acceptance. On the basis of such integrated model, the authors formed seven hypotheses in which they tested factors having an impact on the intention to use electronic government services. The same authors suggested that similar studies already existed in the area of electronic commerce and that it was about time to conduct such a research in the field of electronic government. As for the service adoption of electronic trading research, it is appropriate to see many researches done by Van Slyke, Belanger and Comunale.

In the research paper, Schaupp and Carter (2005) tried to identify factors that influenced the acceptance of a very specific high level of sophistication e-government service – electronic voting [22]. They found that perceived usefulness, compatibility and trust had a significant influence on the intention to use an e-voting service.

The same year, Horst, Kuttschreuter and Gutteling (2005) studied the perceived usefulness, personal experiences, risk perception and trust as determinants which had an influence on the adoption of electronic government services in the Netherlands [14]. Using TPB and TAM for theoretical models,[1] authors came to the conclusion that there was a correlation between perceived usefulness, risk perception, personal experiences and the intention to use e-government services. Trust in government institutions did not correlate with the intention to use.

It is also worth mentioning Mofleh and Wanus (2008) and their findings using Jordan as a case study [19]. In the study they used a research model which is a combination of three well-known theoretical models used for studying the adoption of new technologies. The goal

[1] TPB - Theory of planned behavior, TAM - technology acceptance model.

of Mofleh and Wanus' research was determining the demand for e-government services for citizens of Jordan and identifying factors which influence the increased service demand. By having tested five independent variables they came to the conclusion that not all variables had a measurable influence on e-government service demand. For example, trust in government institutions was in positive correlation with adopting e-government services, while previous experience did not influence the intention to use e-government services. In the end, Mofleh and Wanus came to the interesting conclusion that success of e-government doesn't depend on high level sophistication services (namely, high percentage of citizens in Jordan expressed their need only for the low level sophistication e-government services as, for example, simple data gathering from government institutions Web pages).

Bosilj Vukšić, Požgaj and Milanović (2010) conducted a research about the importance of the relationship between the goals and objectives of e-government projects and how the adoption of IT in government institutions was changing some business processes in these same institutions [7].

Al-Zoubi, Lip Sam, Hock Eam (2011) wrote an article about e-government adoption among businesses. They came to the conclusion that independent variables like relative advantage, IT infrastructure, organization adaptability, organization enrolment, financial resources, competition and government support had significant role in business adoption of e-government [4].

More recently, other researchers also studied the possible adoption of different services.

Some studies, like the one conducted by Viswanath Venkatesh et al. (2012), focused only on high level transactional e-government services. The results suggested that usability, computer resource requirement, technical support provision and security provision were the key attributes for the adoption of those kinds of services [26].

Luka Pavlić et al. (2012) took a different approach. They proposed using semantic web technologies and their potential to improve e-services usage in general [20].

Michael Rackers et al. (2013) attempted to identify factors influencing the adoption of a very specific service, the electronic ID card. Using extended TAM their research revealed that social context greatly influenced the behavioral intention to use [21].

Afshan Azam et al. (2013) used the Unified Theory of Acceptance and Use of Technology to explain the determinants of e-government service adoption in Pakistan. The analysis showed that performance expectancy, social influence and initial trust positively influenced the behavioral intention to use e-government services. Trust of the Internet and Trust of the government were found to significantly predict the initial trust in e-government services [5].

3.1. Research goal

Two research goals result from the previously described research problems. First research goal should provide a clear, structural understanding of the citizens' demands for different levels of e-government services according to the Howard model. The second goal is to identify factors that will increase people's demand for these kind of services.

Therefore, research goals are: a) better understanding of citizens' needs related to e-government service levels as well as b) identifying variables which influence the adoption of such services (using two chosen models). It is necessary to discuss ex post numbers, i.e. theoretical and empirical results underlying service level research.

In summary, in our research paper we wanted to gather data about variables which government institutions need to manipulate with to get the higher acceptance of e-government services. Although we chose Croatia for the country in which the research will be conducted, we believe that the result of this case study research will be similar in all countries with similar socio-economic characteristics.

Authors like Cigdem Akkaya et al. (2011) believe that there is still relatively little research focusing on the role of different factors influencing willingness of citizens to use e-

government services and that majority of trust studies have been conducted in the context of e-commerce [1].

In addition to that, the rationale for this research is to gain a better understanding about the adoption of e-government services from the perspective of citizens of Croatia. Furthermore, the main value and motivation for undertaking this research was, to the best of our knowledge, the lack of prior published research that explores the citizen' willingness to use electronic government services [13]. There is a need for a specific empirical study focusing on the variables which influence the adoption of e-government services. This kind of information can help government officials to learn which variables need to be manipulated with in order to get higher acceptation rates of e-government services. Enhanced with the research model that integrates components of trust with TAM variables, this paper promotes a better understanding of the factors that halt or slow down e-government services adoption.

This research can be used to assist policy makers in formulating successful e-government implementation strategies. It also contributes to the e-government service adoption literature by evaluating users' preferences on different levels of e-government service complexity.

A range of earlier studies have been critically analyzed to provide one integrated model that can identify factors which could influence the adoption of e-government services.

In Croatia, which lags behind other EU countries in e-government, no studies have been undertaken regarding e-government adoption. The study can serve as a starting point for other e-government adoption researches.

4. Research model

The research model consists of five variables – one dependent and four independent. We measured variables using ordinal scales. Using literature review and data gathered through primary research, authors decided for research in which trust in Internet, trust in government, perceived usefulness and perceived ease of use will be linked with the intention to use e-government services.

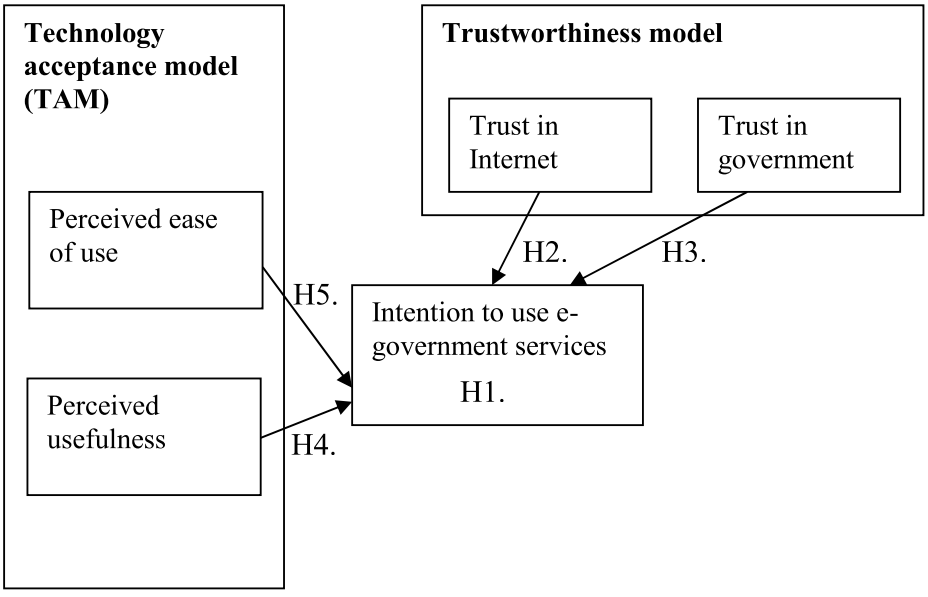

Figure 2. A graphical representation of a model (source: adapted from [8])

The model used in this study is aimed at investigating citizens' needs for different levels of e-government services as well as variables which could affect the same needs. Although there are many models dealing with technology adoption, the model presented in this research

paper is based upon the combination of two models: Technology acceptance model (TAM) and Trustworthiness model. TAM and Trustworthiness are models that have power in predicting and explaining behavior. Furthermore, TAM is considered to be the most robust and influential model for explaining information system adoption behavior. [3]

To be more precise, with this new model we are suggesting the integration of variables of these two models. With the ceteris paribus assumption we isolated the most important and abstract influence of outer less important variables.

4.1. Dependent variable

Dependent variable called "Intention to use e-government" will be used to determine demand for different levels of e-government services according to e-government service levels given by the Howard model. The Howard model defines three levels of e-government services: simple publication level (e.g. browsing the Web content), interaction level (e.g. e-mail query) and transaction level (e.g. online payments) [15].

4.2. Independent variables

The first two independent variables originated from the theoretical model of e-government adoption called the Trustworthiness model (or the Web trust model) [22]. These two independent variables are called "Trust in Internet" and "Trust in government". Namely, it is assumed that successful service acceptance depends on trust in technology which enables certain e-service and on trust in government as the service provider. Therefore, the first independent variable "Trust in Internet" is "technology oriented" variable, with the help of which we investigated the impact of citizens' trust in Internet technologies on dependent variable. The second independent variable "Trust in government" exists because it is considered that the successful e-government service adoption demands citizens' trust in competency and integrity of a service provider (in our case, the government).

The third and fourth independent variables are originally from the Technology acceptance model (TAM). Variables are called "Perceived usefulness" and "Perceived ease of use". The variable "Perceived usefulness" is defined as a degree to which a person believes that using a particular system would enhance his or her job performance. The variable "Perceived ease of use" is defined as a degree to which a person believes that using a particular system would be free of effort [6].

4.3. Hypotheses

Based on the gathered data and analyzed research up to date, defined problem and determined research goals, research hypotheses were set. Research hypotheses and variables can be seen in Table 1. Model and hypotheses testing was conducted using one dependent and four independent variables.

	Hypothesis	**Variable**
H1.	Citizens prefer e-government services of low level of sophistication.	Intention to use
H2.	Intentions to use e-government services have citizens with high trust in Internet technologies.	Trust in Internet
H3.	Intentions to use e-government services have citizens with high trust in the Government.	Trust in government
H4.	High level of perceived usefulness is in positive correlation with citizens' intention to use e-government services.	Perceived usefulness
H5.	High level of perceived ease of use is in positive correlation with citizens' intention to use e-government services.	Perceived ease of use

Table 1. Research hypotheses (source: own contribution)

By testing the first hypothesis we were able to recognize the needs for a certain level of e-government services. The confirmation that citizens generally use e-government services of low level of sophistication will show that government's effort for developing high level e-government services is sometimes unnecessary. That will prove that e-government success does not depend only on the sophistication of services which this government offers.

With the second and third hypothesis (derived from the Trustworthiness model) we would like to test if e-government services are used by citizens who believe that Internet technologies are safe ("technology oriented" variable) and, also, whose trust in government as a service provider has an impact on using e-government services.

With the fourth and fifth hypothesis (derived from the Technology acceptance model) we would like to test if perceived usefulness and perceived ease of use have an impact on the intention to use e-government services.

In this research, we will actually collect data which will tell us which variables state agencies have to manipulate with to get greater acceptance of electronic government services.

5. Research methodology and measuring the instrument of research

A survey was the main measuring instrument of our research. Given the way of implementation, the survey was conducted personally, by e-mail and using Google Docs tools. Research data were analyzed by using prominent predictive analytics software package. The research was conducted in late 2012.

5.1. Sample and limitations of research

In the research paper, populations that were investigated were Croatian citizens who are Internet users. As an addition to this assumption, some additional conditions had to be met and those are: citizens from the sample had to be active Internet users,[2] they should be Internet users for at least two years, they shouldn't be younger than 18 nor older than 55 years, the structure of education of examinees should be the same as the structure of education of citizens of Croatia with Internet access and examinees shouldn't be IT students with high computer skills. The survey was conducted using random sampling method on a sample of 200 citizens. The assumption is that we are dealing with pretty homogeneous population with little variability. There is a reason why only active Internet users have been chosen to be surveyed. We wanted to investigate people who are electronically capable of accessing e-government services. Using active Internet users in the survey, we concentrated on people's needs, rather than digital divide issues. Some relevant researches are using similar sample strategy [19]. The survey has not included IT students because of their high technological awareness. The limitation of research is related to a lack of previously conducted researches and low comparability of the results.

5.2. Metric characteristic of measuring instrument of the research

Structurally, the questionnaire consisted of four scales or for each independent variable there was one scale of questions. For measuring dependent variable, three open questions were intended. For all independent variables, scales consisted of six items. Likert scale with the range from 1 to 5 was used to measure all claims which are used to measure dependent and independent variable.

Cronbach alpha index was used for measuring reliability of the survey items. Cronbach alpha index confirmed the internal consistency of the survey. With the selection of items in the scale, the goal was to get higher Cronbach alpha values.

[2] Under active Internet users we have considered those people who access the Internet at least once a week.

Construct	Number of items	Reliability
Intention to use	3	.902
Trust in Internet	6	.600
Trust in government	6	.796
Perceived usefulness	6	.642
Perceived ease of use	6	.753

Table 2. Cronbach alpha indices of the scales used in the research (source: own contribution)

Table 2. shows that results of reliability analysis are acceptable, ranging from very high .902 to, for this research satisfactorily, .600.

Factor analysis with Promax rotation was used to evaluate the validity of a construct. We used factor analysis in the research when a large number of variables appears to stand in correlations. In other words, we were testing how much each item contributes to the scale. Item TI indicates Trust in Internet variable, item TG Trust in Government variable, item PU Perceived Usefulness variable and item PEU Perceived Ease of Use variable.

Items	Factor loadings			
	Trust in Internet	Trust in government	Perceived usefulness	Perceived ease of use
TI2	.852			
TI5	.901			
TI3	.760			
TI4	.729			
TI1	.712			
TI6	.861			
TG1		.865		
TG5		.780		
TG6		.746		
TG3		.682		
TG4		.649		
TG2		.617		
PU2			.912	
PU3			.863	
PU5			.825	
PU6			.719	
PU1			.701	
PU4			.653	
PEO3				.857
PEO6				.762
PEO1				.725
PEO4				.723
PEO5				.688
PEO2				.652

Table 3. Factor analysis results (source: our own contribution)

Table 3. shows that the factor structure of used scales is confirmed. More precisely, items from the scale Trust in Internet formed the first factor, items from the scale Trust in government the second, items from the scale Perceived usefulness the third factor and items from the scale Perceived ease of use formed the fourth factor with factor loadings ranging from solid .617 to high .912.

	Number of items	M	SD
Intention to use	3	11,4	2,08
Trust in Internet	6	12,3	1,71
Trust in government	6	12,8	0,43
Perceived usefulness	6	22,4	1,29
Perceived ease of use	6	24,5	2,24

Table 4. Descriptive statistics of used variables (source: own contribution)

Table 4. shows characteristics of the variables used for testing hypotheses. M stands for Mean and SD stands for Standard Deviation.

6. Testing hypotheses

The testing of hypotheses was conducted by a method of simple linear regression. The role of regression analysis is to test the influence of independent variables to the dependent one [9]. A linear regression analysis was conducted with the goal to show the influence of four independent variables on the dependent variable Intention to use.

6.1. Testing dependent variable

Results for testing the first hypothesis related to Intention to use are shown in Table 5. According to Howard, implementing an e-government system passes through three different stages until it reaches its highest potential stage [15].

Would you use Web pages of government institutions for …	Yes, probably yes	Not sure	No, probably no
Simple data gathering	82%	17%	1%
Sending queries electronic way	54%	44%	2%
On line paying	32%	56%	12%

Table 5. Intention to use e-government services (source: own contribution)

Table 5. shows that the majority of people would use e-government services of low level of sophistication (82% of people). As the level of offered e-government services increased, the percentage of people who are willing to use e-government services decreased. Based on test results of the first hypothesis, the first hypothesis is confirmed. These research results are similar to other e-government research findings [15].

6.2. Testing of independent variables

The testing of hypotheses about the relation between Trust in Internet, Trust in government, Perceived usefulness, Perceived ease of use and Intention to use, was conducted by a method of simple linear regression. Using simple linear regression model, we made the assumption that variables which are included in this kind of analysis are distributed according to normal, Gauss distribution.

Hypothesis	Variable	Beta ponder	T-test	Significant	Support
H2.	Trust in Internet	.584	11,43	.000	Yes
H3.	Trust in government	.027	0,87	.384	No
H4.	Perceived usefulness	.189	4,07	.000	Yes
H5.	Perceived ease of use	.216	4,53	.000	Yes

Table 6. Regression analysis results (source: own contribution)

The goal of this analysis is to determine which independent variables are in relationship with the dependent variable and to which extent. T-test in Table 6 shows us whether an independent variable has a significant link with the dependent one, whereas beta ponders show how much an independent variable explains the variance of the dependent variable. Therefore, beta ponders are a relative indicator which shows which independent variable explains most the variance of the dependent variable. If we weigh all independent variables with their betas, we get regression coefficient R whose square tells as how big the percentage of variance of the dependent variable model explains.

Trust in Internet, Trust in government, Perceived usefulness and Perceived ease of use were independent variables and Intention to use the dependent variable. Obtained results (Table 6) show that three independent variables – Trust in Internet, Perceived usefulness and Perceived ease of use account for 83% of variance of dependent variable Intention to use ($R=.912$, $F=224.94$, $p<.000$), while Trust in government has not been shown as a significant predictor of Intention to use e-government services. If we compare the size of beta ponders, we can see that Trust in Internet is by far the best predictor, i.e. it contributes the most in explaining the variance of intention to use (beta = 0.584, $t=11.43$, $p<.000$). We can make a conclusion that people with high perceived usefulness and perceived ease of use and especially with high trust in Internet have high intentions to use e-government services. Thus, we have confirmed hypotheses H2, H4 and H5.

7. Discussion of research results and comparison to other chosen researches

This research has identified factors that determine if the citizen will adopt e-government services and thereby aiding governments in accessing what is required to increase adoption. For the dependent variable, these findings were expected. We can clearly see that the percentage of demand for e-government services decreases as the sophistication of e-government services increases. These three categories (simple data gathering, sending queries electronic way, on line paying) are not separated one from another, but represent categories in categories. Simple data gathering is the widest category in which there is a sending query, electronic way category and e-payment category. In other words, it will be hard to expect that someone who is willing to make e-payments to e-government institutions is not willing to search their Web pages. And because of that, these findings are logical and expected. However, we can clearly see that people are reluctant to use e-government services of high level of sophistication.

Author/Year	Country	Issue Findings about e-government adoption
Mark Horst et al. (2006) [14]	Netherlands	- The Perceived usefulness is the main determinant of intention to use e-government services - Risk perception, personal experience, perceived behavioral control and subjective norm were

		found to significantly predict the perceived usefulness
Samir Ibrahim Mofleh, Mohammed Wanous (2008) [19]	Jordan	- Trust in government, Trust in the Internet and Compatibility were found to be significant in predicting citizens' intention to use e-government services
Shafi Al-Shafi, Vishanth Weerakkody (2009) [3]	Qatar	- Performance expectancy, effort expectancy and social influence have significant positive relationship with the intention to use e-government services - Gender, age and Internet experience are found to be insignificant in terms of predicting the behavioral intention to use e-government services
Ooh Kim Lean et al. (2009) [17]	Malaysia	- Trust, Perceived Usefulness, Perceived relative advantage, Perceived image have positive significant relationship towards intention to use e-government service - Perceived complexity has a negative significant relationship
Afshan Azam et.al. (2013) [5]	Pakistan	- Performance expectancy, social influence and initial trust positively influence the behavioral intention to use e-government services

Table 7. Selected studies about e-government service adoption (source: own contribution)

Generally speaking, about 98% of the countries in the world have developed government Web sites, with less than one-third providing transactional services such as online submission form. [26] In other words, responders are generally supportive of e-government measures, but the majority was reluctant to use some of the more sophisticated transactional e-government services.

If we compare these findings with the similar research from Mofleh and Wanous (2008), we can see that in our research more examinees induce willingness to use e-government services regardless of sophistication level [19]. This difference is especially visible in percentages of negative responses. While in Jordan most of the people answered negatively about the intention to use e-government services, in Croatia this percentage of negative answers is much lower, but the neutral answer – Not sure – is higher. This is clearly shown if we look at the intention to use e-government services of high level of sophistication. As for independent variables, researches from Mofleh and Wanus (2008) gave similar but not the same results [19]. For example, citizens of Jordan believe that people with a high level of trust in government as a service provider have higher intention to use e-government services. When it comes to Croatian people, this variable was not proven to have a significant influence on the intention to use e-government services.

As for other researches in this field, the works of Horst, Kuttschreuter and Gutteling about the adoption of e-government services in the Netherlands have shown similar results related to trust in government [14]. They also included risk perception in their research and concluded that risk perception strongly correlates with the intention to use e-government services.

We can also find similar findings in the work of Lemuria Carter and France Belanger on USA citizens. Their three component model (TAM, DOI and Trustworthiness) has shown

that variables Perceived usefulness, Relative advantage and Compatibility are significant in predicting citizens' intention to use e-government services [10]. Unlike our research, perceived ease of use has not shown significant.

We have no reason to believe that researches in countries with similar socio-economics characteristics will be much different. For example, Estonia, Hungary and Poland have similar index of GDP per capita as Croatia [12]. According to Eurostat, these countries (plus Lithuania) have also a similar level of Internet access [18]! But it is hard to be exact in finding reasons for differences between regions in adopting e-government services. There are many theories which are trying to explain different findings in different countries regarding e-government service adoption. Still, the reasons underlying the citizen's hesitance to use online public services are far from being understood. It is widely believed that social and cultural norms influence the adoption of Information and Communication Technologies [2]. Hofstede's national culture dimensions (especially Uncertainly Avoidance Index, UAI) is often used for this purpose. Cultures with the low UAI tolerate risk easily and are likely to take risks. On the other hand, cultures with high UAI seek stability and predictability and as a result they are less likely to adopt online technologies [2]. For example, UAI for Croatia is 80 which are much higher than in the Netherlands which UAI is 54. It is interesting to notice that according to the United Nations E-Government Survey, the Netherlands is ranked second as the world e-government development leader [25]! We also believe that it will be interesting to do a similar research on all EU countries and then compare results between developed and developing countries.

The findings can also provide useful recommendations to the development of policy making. Policy makers can improve strategic e-government planning monitoring Trust in Internet, Perceived usefulness and Perceived ease of use, the three factors that influence intention to use e-government services.

8. Conclusion, limitations and implications for further research

No other medium in the world has had such a dynamic growth as Internet. Today, Internet has the central role in modern communication, first and foremost in the business world then slowly in private communication. For users (citizens), digital technology and Internet have become an important part of everyday live, especially in the segments of Internet banking, Internet shopping and Internet (electronic) government. Therefore, we believe that researching citizens' needs has a big importance in the process of informatization of government.

In this field, the role of political structures (Parliament, Central Government Office and other institutions involved in the informatization of government) is crucial. Their task is to create technical and legal basis for electronic government functioning. Based on comparative data, it is easy to conclude that countries with higher availability of public services on Internet are also countries with higher economic growth [12]. The main conclusion is that developing countries should not focus on achieving advanced level of e-government service but rather boost their e-government (and e-business) activities.

We believe that this paper could give information about the needs of e-government services and factors influencing them among citizens. But we also believe that we will find similar findings in all countries with similar socio-economic characteristics. Based on that, we decided to conduct the research about real citizens' needs for electronic government services and also to find how different variables influence the adoption of these services.

The research conducted in this article shows that a large number of people doesn't oppose using electronic government services of low level of sophistication (82%). Also, the number of people who are willing to use e-government services, middle level of sophistication, is not insignificant (54%) while the number of people willing to make payments on government Web pages is low (32%). Based on test results, hypotheses connected with Trust in Internet, Perceived usefulness and Perceived ease of use influence on people's intention to use e-government services are confirmed. Trust in government as a

service provider has not been identified as a significant variable that will increase citizens' demand for e-government services.

The sample sizes in the comparable international studies are similar to our sample. Our sample does include active Internet users, but we excluded people with advanced IT skills. Also, like in some other works, e.g. Viswanath Venkatesh et al. (2012), this sample does not include senior citizens and inexperienced Internet users. This should not be a problem because the target users of e-government services are Internet users. [26]

The findings presented in this study provide useful insights for researchers and policy makers when dealing with e-government services.

Research paper and reports conducted by the European commission and the United Nations indicate that developing countries lag behind EU countries in digitalization of their public services [16]. Still, lately many of developing countries made significant steps in informatization of their public services. The impression is that even political elites are coming to understand the importance of informatization of government public services.

Professor George E. P. Box used to say that "all models are wrong, but some are useful." The model used in this research is just one of many possible approaches in researching the problem of adopting electronic services. The model has some limitations, because it does not take into account all determinants which could influence the intention to use. In accordance with this, for future research we recommend an extension of the existing model. Nevertheless, the recommendations for further research include specific populations (e.g. senior citizens, students, people with high school, people with higher education) to get a more specific structure of the population which is interested in using e-government services. Besides that, it is recommended that future research uses a larger sample. Within the context of scientific contribution, a more detailed comparison with other countries seems to be of interest. Also, it would be of great interest to make a research about the correlation between life standard and the use of electronic government services.

One of the limitations of this study is that it is a single country study with limited generalizability. However, an important lesson can be learnt.

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