ANATOMY OF E-GOVERNMENT: ASSESSMENT OF MUNICIPAL E-GOVERNMENT SERVICES IN ROMANIA

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Abstract

The present study will discuss the issue of e-government services offered at the municipal level in Romania and will look at how the level of e-government services varies between the biggest ten cities in Romania answering the research question "What is the level of e-governance sophistication and services offered by the biggest ten municipalities in Romania?". The question will be answer by using content analysis as the research method, and assessing the official website of the local government in each of the cities in the study. Because such a study has not been carried out before in Romania, its findings can be of help both to researchers who can use them for further researches and as well for practitioners who want to have an overview picture of the municipal e-government services in Romania. The results of the study show that the level of local e-government services in Romania is relatively low, but with some front runners both in the overall scoring, and on categories of services.

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Introduction

The use of Information and Communication Technologies for the delivery of public services is becoming more and more popular throughout the world. Initially started in the private sector, now the public sector sees a flourishing development of e-services. There are various reasons for developments to take place: one is the fact that by employing and using e-government services, organizations grow and develop, in the same time with reducing costs and increasing efficiency, as well as transparency. The other reason refers to the citizens being perceived and treated more and more as 'customers' and therefore improving their experience with the local government. With a better experience and easier communication modes, the participation of the citizen increases and the policy process improves, as more stakeholders are included in the process.

The take up of e-government differs from region to region, from country to country, and even inside countries differences in e-government implementation exist. The present study will look at how the level of e-government services varies between the biggest ten cities in Romania. Such a study has not been carried out so far in Romania, and its findings can be used for further studies, on various other issues related to e-governance.

The research question guiding the present study is "What is the level of e-governance sophistication and services offered by the biggest ten municipalities in Romania?" The primary objective of the study is to assess the level of e-governance services in the cities with a population greater than 200,000 inhabitants. Based on the findings of the study and their analysis,

the study has as secondary objectives, presenting recommendations in regards to the topic of e-governance at local level.

Worth mentioning here are the research limitations, which arise due to the sample of the study and the framework of analysis used. First of all, the study only takes into consideration cities with population higher than 200,000 inhabitants[1], and tries to generalize and give recommendation for smaller cities as well. Another issue is the fact that the study is based only on the researcher's observation and analysis of the websites, without pursuing further research methods, such as in depth interviews. However, the present study could be used as the starting point for future research on the topic of e-governance in Romania, especially at the local level. Second, the data gathered and the analysis can not be extrapolated outside of Romania and should not be used as a comparison basis with for other cities in a different country.

Following the study will discuss e-government theory, touching on the issue of measurement of e-government and e-government stages in Chapter 1. A brief description of the e-government topic in Romania follows in Chapter 2, while Chapter 3 will present the methodology and the sample used in the study. In Chapter 4 the framework for the analysis of the e-government services will be described and discussed. The findings of the study, together with the analysis will be presented in Chapter 5, and in the Conclusions final remarks will be made and recommendations will be offered.

[1] For more in this sense, see Moon 2002 who suggests, that city size is positively associated with the adoption of a municipal website as well as the longevity of the website.

Chapter 1: E-Government Theory

At the core of the e-government movement, is the idea to improve citizen services in the same time with getting closer to the ones served, but also to actively involve the citizens in the decision – making process. More and more e-government services are becoming available for the citizens around the world as they are seen as bringing various benefits such as increasing citizen satisfaction, enhanced service integration, developing a 'one-stop shop'[2] portal offering a wide range of services in one place or improved government at local level (Coe et al. 2001, Watson and Mundy 2001, Tat-Kei Ho 2002). In terms of citizen centricity, e-governance can offer much more accessible services (available at their own time and place) with saving time as well, while from the organizational perspective, implementing e-government services can close the gap between civil servants and the citizens serviced, and increase the participation of civil society and citizens in the policy making as well as bring more transparency to what is perceived as an opaque, sometimes corrupt environment.

E-government represents a lot of things: services, opportunities or information offered. However, merely offering existing information online is not e-governance. Although having government information on a website is part of the process, it can and should not stop at this stage. The process needs to evolve towards a "more value added transactional – level services that offer convenience, efficiency and transparency" (Dwivedi 2009). For such a process to happen, the meaning of e-government needs to be grasped, as well as the right measurement tools need to be developed and assessed so that the evolution can be identified.

[2] Tat-Kei Ho defines the one – stop concept as „an umbrella organization that operates on top of existing functional departments and is intended to maximize the convenience and satisfaction of users through service integration" (Tat-Kei Ho 2002, 436).

Defining e-government, as hard as it is, became recently an intense activity within the field. Consequently, there are various definitions being developed that refer to different aspects of the topic. Of particular interest to this study, several definitions will be enounced and explained in the following paragraphs, pointing to the aspects most important for the study, as well as the understanding that will be used for the analysis and answering the research question. Signore defines e-government as "the use of ICT (information and communication technologies) to improve the process of government", while Garcia defines it as "the intensive or generalized use of information technologies in government for the provision of public services, the improvement of managerial effectiveness, and the promotion of democratic values and mechanisms" (Garcia 2003). At the European Union level, e-Government is defined as "the use of information and communication technologies in public administrations combined with organizational change and new skills in order to improve public services and democratic processes and strengthen support to public policies" (European Commission 2003). All in all, these definitions refer to two tiers: the improvement of governance, whether at managerial level or organizational structure, as well as involvement of the public in the decision making process, for a stronger support of the policies and public services. The public is at the core when dealing with e-government for Netchaeva as well. She sees e-government from the perspective of the public and states that "for the public, e-government means a simplification of their interaction with government thanks to Internet connections" (Netchaeva 2002, 467). This last definition is at the basis of the present research. Citizens need to be perceived as customers for the services offered by the local municipality through Information and Communication Technologies. However, due to the fact that citizen satisfaction will not be measured at this point, but an assessment of the websites of the biggest municipalities in Romania will be done, it is worth reinforcing the definition used by the

European Union for the core understanding of what e-governance means: improving public services and citizen participation through the use of Information and Communication Technologies together with acquiring skills and advancing organizational change that will support the new structures.

The paper looks at e-government services offered at the local level. Therefore, a short discussion on municipal e-government services will be conducted next, looking at how other studies similar to the one presented here were conducted, with the aim of creating the framework for analyzing the services offered in the municipalities researched in the present study.

The closest relation between government and the ones served is at the local level. Municipalities all over the world adopted and implemented e-government services, whether as part of a national plan or individually at the municipal level. Research has been carried on for the various types of e-government services to be compared and assessed. This research on the development of the municipal e-government is growing fast, in addition to the research of e-government in general. Studies are conducted longitudinally (Arslan 2007), depending on the population size (Anttiroiko 2004) or comparatively at the national level (Kaylor 2001). Although the number of studies has increased over time, the fact that they are mainly each tailored to a certain local or national example makes it difficult for a unified method and approach of researching e-government development to be developed and used by researchers and practitioners. However, the experience of other municipalities in dealing with e-government services is of paramount importance and should be perceived as such. As Kaylor (2001) sees it, municipalities should make their decisions keeping in mind the experience of other cities with e-government services. This way, e-government services can be improved, as well as guidelines of

best practices can be developed in order for challenges to be overcome and failures avoided as much as possible.

Whenever one thinks of municipalities dealing with citizens, in the traditional way, hierarchy is the word that comes right away to mind. Government is perceived by many citizens as synonymous with Weberian bureaucracy. Although he was not the only one that discussed the bureaucratic model of public administration, he is one of the most well known. As described by Weber, bureaucracies are understood as organizations that are goal-oriented, in which rational principles are the basis of their working, with the aim of increased efficiency. The rise of bureaucracy happened due to the growing complexity of the societies – meaning that a modern society could only function efficiently through a formal and well structured bureaucracy. The most important elements of the formal structure of bureaucracy have been described by Weber and included the division of labor, hierarchical order and impersonal written decisions, rules and acts. Yet, although perceived by Weber as one of the best models of organizations, a lot of critics found flaws in his theory (rigidity, over procedural, lacking outcome orientation, treated people as numbers) and other interpretations on public administration and theories emerged, theories such as Neo-Weberianism, New Public Management or Network Governance. They all tried to place the focus of public administration on the citizen, just like a business places its highest value on the customer. In this respect, the development of information technology and the emergence of e-governance come to assist a more customer-oriented approach for local governments and municipalities and improve the perception of citizens and the trust in local government.

Learning from the experiences of others is particularly welcomed in the area of e-governance. And the best way to use the example and experience of other municipalities is by

looking at the measures of the quality of their websites and the policies adopted by them. Different studies in this regard have been carried on, commissioned by public entities or academic ones and indicators of e-government stages were developed and explained in different models throughout time. In section 2.2 the most important models developed over time will be presented and explained, so that in chapter 4 the framework used in assessing the cities of the present study will be developed from them.

1.1 Measurement of E-Government

An issue when dealing with assessing e-Government (whether at local or national level) is the way it is measured. Some studies employ quantitative methods (by developing indices and scores that rank the various municipal e-government services) while others use qualitative ones in order to assess the level of development, the quality and the sophistication of e-government services. This takes us to a very important concept: *sophistication*, which refers to the level of services that are offered to citizens and businesses. At the European Union level there are identified "different degrees of sophistication of online public services ranging from 'basic' information provision to 'full' electronic case handling (fully available online) and proactive, personalized service delivery" (European Commission 2007).

The development of online sophistication and of the services offered through e-government is being measured through various indicators and benchmarks. At the European Union level, a new set of benchmarking indicators has been approved in November 2009 and includes a collection of statistics on the information society. These indicators are divided in different categories such as the ICT sector, Broadband and Connectivity, ICT usage by Individuals and Households, ICT usage by Enterprises and e-Public Services.

Out of all the above categories, the present paper will concentrate on the last one: e-public services and will use models already vastly used in the literature of development level of e-governance services offered to citizens. Measuring online sophistication helps us understand where a certain e-government service stands in relation to other similar services. The higher the online sophistication of e-government services, the closer a nation is to reach the aim of a fully developed information society where personalized service delivery is the case. In the case of Romania, where the process of implementing e-government services is more or less at the beginning of the road, knowing where the country stands in terms of online sophistications is of paramount importance. Policy makers need to have a clear and correct image of the stage that the e-government services currently occupy, in order to know whether the strategy should go further, or should be improved, based on the services offered.

1.2 E-Government Stages

One of the first researches on the models of e-Government development was the one presented by Layne and Lee in 2001. Their article presents various stages of "e-government development and propose a 'stages of growth' model for dully functional e-government" (Layne and Lee, 2001). The four stages of growth model for e-government are "Catalogue", "Transaction", "Vertical Integration" and "Horizontal Integration". They are derived based on the technological and organizational complexity as well as the integration levels. The first stage is the one in which the government transfers information online and therefore establishes an online presence. Also, in this stage, forms are beginning to be available online for downloading and information to be searchable. The second stage refers to e-government "allowing citizens to transact with government electronically" (Layne and Lee, 2001) in the form of services and forms on-line and database supporting transactions carried online. The next stage of e-government

development is seen as coming as a natural step in reaching citizens' expectations. A more complex integration both at a vertical and horizontal levels is needed so that various levels of government communicate with each other to the benefit of the citizen that will "see the government as an integrated information base" (Layne and Lee, 2001). The "one-stop shop' concept is introduced as part of these last two stages, understood as contacting one point of government and completing any level of governmental transaction. The vertical level refers to the communication of the different levels of government (in the article, local, state and federal) regarding similar functionalities, while the horizontal integration stage refers to the communications across different functions, with the concept of 'one-stop shop' taking shape and fully functioning. Once the last stage is reached, the citizen can benefit from transparent, serviceable on-line government services that are connected and omnipresent.

Another model developed one year later comprises fewer stages, but refers to the same services as the ones in Layne and Lee's model and was prepared by the World Bank. The three stages it involves are: "Publish", "Interact" and "Transact". The first stage refers to using Information and Communication Technologies in order to increase the access to the great amount of information government produces. In the second stage, by interacting with the government, the public engages in an enhanced participation in the governance process and the policy cycle. Transact stage refers to allowing citizens to perform transactions with the government on-line similar to e-commerce services utilized in the private sector.

Important to mention here is the fact that the last two stages could be perceived the same as stage 2 in Layne and Lee's model – Transaction. It can be said here that this model does not go further than the citizen centered services offered, to an organizational change and restructure, as

the previous model does. However, the fact that it has fewer stages does not take from its importance. Focusing on the citizen should be at the core of e-government and municipalities need to acknowledge, put it into practice and work towards improving the on-line citizen – government relation.

On the same understanding of e-government centered on the citizen is Netchaeva as well. Her model of e-government development involves five stages. The first stage is described as "Separate local and federal sites"– which refers to the creation of specific departments on-line websites that work on their own and "carry only specific information" (Netchaeva 2002, 467). The second stage is the one in which there is a "Possibility to ask questions (via email)" – the websites that in the previous stage are carrying only specific information offer now citizens the opportunity to interact to them (interaction perceived mostly as via email). The third stage is a continuation and a development of the second: citizens now have the "Possibility to take part in forums and opinion polls" and not rely only on sending emails. The forth stage is the one with "Some services online" and refers to "offering online services such as payment of fines, renewal of licenses, registering one's car or moving house" (Netchaeva 2002, 468). The final stage is the one in which all the departments are integrated in a portal offering various services to the population. It includes "E-government portals. Social services online. Polling online. Public participation. Interactivity". (Netchaeva 2002, 468). Although her model involves five stages, the second and third stage could be very well considered as one, that in previous models (Layne and Lee 2001) is categorized as stage 2. The current study, as presented below will group these two stages as one for the purpose of simplification and better understanding of the models framework.

In 2004 West outlines his model of e-government stages in order for a better transformation of e-government services to take place. There are four stages that he presents: "Billboard", "Partial – service – delivery" stage, "Portal" stage and "Interactive democracy" stage. Although with a different name, his first stage is the same as the ones presented here from previous models. It refers to governmental information being available online, just as highway billboards display information. His second stage refers to a level of partial services being offered to citizens. They can start searching for information of interest to them, as well as "accessing material in the form they prefer" (West 2004, 17). In the third stage the 'one-stop shop' concept is introduced by West as well – this stage is the evolution of the partial service delivery. In this stage, issues such as security and privacy are beginning to be taken into consideration by officials and citizens' concerns to be addressed. The last stage is the one in which the website "moves beyond the service – delivery model to system wide political transformation" (West 2004, 17), offering the citizens the possibility to benefit from two – way communications with the governments.

The model offered by Siau and Long is similar to models developed before by other researchers. This is particularly happening due to their research approach in that they transformed the stages of different other models so that a more comprehensive new e-government stage model was developed. Comparing it to models presented in this study, it is similar to the World Bank one, for the first part of the stages. It includes Web presence (stage 1), Interaction (stage 2), Transaction (stage 3), Transformation (stage 4) and E-democracy (stage 5). The stage introduced by them that is not found in the models assessed in their study is the fifth one: e-democracy and refers to changing the original mean of interaction with governments by citizens and business.

Users can express their opinions and participate in activities such as surveys, conversation forums or e-meetings. (Siau and Long 2005, 455).

The models presented above can be summarized in the following table, where various stages were compressed, so that two or more stages referring to the same concept are included in an encompassing theme. Having the overview of the different stages in mind, we will next choose the stages that the framework for analysis will be build on explaining which themes and which variables will be used.

Table 1: Models of e-government development

Author / Stage	**Stage 1**	**Stage 2**		**Stage 3**	**Stage 4**
Layne and Lee	Catalogue	Transaction		Vertical Integration	Horizontal Integration
World Bank	Publish	Interact	Transact		
Netchaeva	Separate local and federal sites	Ask questions and take part in forms and opinion polls	Some services online	E-government portals	Possible democracy
West	Billboard stage	Partial-service-delivery		Portal	Interactive democracy
Siau and Long	Web Presence	Interaction	Transaction	Transformation	E-democracy

As the first stage is the stepping stone in setting up e-government services, it will represent an important part of the framework developed in the present study. The first component is Online Presence. However, as already stated in the beginning, a municipality can not limit itself to only making information available. It needs to build up services and move towards citizen oriented services. The second component of the analysis framework is Interaction and Transaction Services and will cover stage two from the table above. The last two stages will be considered as one in the study under Advanced Online Sophistication, while the forth component of the analysis is represented by Evaluative Criteria – the rationale behind including such a

component is for variables that influence the overall satisfaction of a citizen to be taken into consideration. The variables under this component will range from the overall look of the website to the existence of information in multiple languages. These, together will all the other variables under the first three components are explained and operationalized in Annex 1 – Codebook.

The framework developed for this particularly study is not necessarily perfect and can suffer modifications and improvements over time, as well as depending on the characteristics of the municipalities or countries assessed. However, the fact that many of the variables in the framework are found in many similar studies is an indication of their importance in assessing the level of online e-government sophistication at the local level.

The next chapter will look at how e-governance began being implemented in Romania and more specifically in Romania, how it is regulated and how the funding is secured for such projects.

Chapter 2: E-Government in Practice - Romania

Based on the sophistication and the level of development, different countries have reached various stages. While some rankings are being done and can be found, whether at global or regional levels, one has to take into consideration the various indices they refer to when trying to compare the positions that countries occupy. These comparisons can be done if all aspects are accounted for, however the purpose of the present study is to assess the development of e-government stages in Romania, therefore it will not compare them with other cities in different countries, nor will the results applicable to other cities in other countries.

As a new member of the European Union, Romania began developing and implementing e-government strategies as part of the accession process. The Ministry of Communications and Information Society is the entity in charge with the e-government strategy in Romania, the Romanian E-Government portal being regulated through Law 161/2003. Although several national e-government strategies have bee adopted throughout the years, the implementation phase lacked most of the times. Various agencies have been created within the Ministry of Communications and Information Society, agencies that disappeared with time without any accountability of the processes implemented and the targets reached having been done. The last example is that of the Agency for the Information Society Services, disbanded on November 2009. However, as part of the previous strategies, a portal for e-taxes (http://www.ghiseul.ro/) has been created, as well as one for e-procurement (http://www.e-licitatie.ro).

Legislation on the subject deals with the Freedom of Access to Information which can be exercised using online tools, to the payment of taxes online, as well as regulation of digital signatures. One lacking aspect in terms of legislation and Information and Communication

Technologies is privacy and security issues. Although Romania has laws on both aspects enacted, they do not have any provision regarding the online privacy issues, but the two issues are covered in general.

Nonetheless, Romanian information society is evolving and developing, although the take up of services is especially low from the individual users' part. In terms of municipal e-government development funding, financing sources exists, partially from the European Union, partially from the national's budget. Some of the municipalities already applied for such funds in order to be able to develop the infrastructure needed for e-government services, or to improve the level of services offered to the citizens. In addition to the e-government services projects, there are beneficiaries of projects on e-education and e-health at the local level in Romania, all these projects increasing in this way the level of services offered to the citizens, as well as the overall level and the development of the information society in Romania.

The existence of funds for the development of e-government services does not translate necessarily in municipalities applying and using them. Up until October 2009, only 15 municipalities benefited from such funds for the development or improvement of their e-government services or infrastructure related to e-government[3].

More and more municipalities in Romania began using Information and Communication Technologies for service delivery, even if at incipient stages (information provision). The paper will look at the biggest ten cities in Romania and will assess the level of e-government services offered to citizens. The methodology is described in the next chapter, after which the framework

[3] http://fonduri.mcsi.ro/?q=node/173 (last accessed June 1, 2010).

used in the analysis will be defined and discussed in chapter 4, moving forward with the analysis and the conclusions in chapters 5 and 6 respectively.

Chapter 3: Methodology

As the present research deals with information available online, in order for a comprehensive understanding and a better analysis to be carried out, we will use as research method content analysis. A survey will be carried out (based on a framework/model drawn from the literature on municipal e-government) on the biggest cities in Romania in regards to the municipal e-government services offered. Based on this model, the development of the websites and sophistication of the services offered will be evaluated against a set of categories and variables drawn from the literature and other similar studies and researches (Sousa and Lopez 2007) and a ranking of the surveyed cities will be prepared, on each of the category, as well as on the total points obtained by each city.

The categories and variables are coded and weighted so that they are all equally represented in the final ranking. Each of the 4 components was given 25 maximum points with a total of 100 total points for a city possible to obtain. In regards to the variables, they had various numbers of indices (from 8 minimum, to 15 maximum), each weighted depending on the service described (maximum points for each variable is available in Annex 1). Most of the indices are scored on a scale of 0 to 3, while some are evaluated dichotomously (0 or 1). The explanation and operationalization of each of the component and variable will be presented in the next chapter.

Scale	Description of scale
0	Information about a given topic does not exist on the website
1	Information about a given topic exists on the website (including links to other information and e-mail addresses)
2	Downloadable items are available on the website (forms, audio, video and other and other one-way transactions, popup boxes)
3	Services, transactions, or interactions can take place completely online (credit card transactions, applications for permits, searchable databases,use of cookies, digital signatures, restricted access)

Source: Holzer and Kim 2007, 20

As for sampling, the criteria used when choosing the cities analyzed in the study were a population higher than 200,000 inhabitants and the existence of a functional official website. The information on the population size was retrieved from the Romanian National Institute of Statistics[4]. Romania has ten cities with a population higher than 200,000 as of July 1, 2008: Bucuresti (1,943,981), Iasi (313,994), Timisoara (311,481), Cluj-Napoca (308,763), Constanta (302,242), Craiova (297,539), Galati (291,608), Brasov (278,712), Ploiesti (229,258) and Braila (212,981). They all have a functional official website (each of them found in Annex 3) that was analyzed based on the proposed framework.

Data was collected for each of the cases addressed in the current study individually and consequently, an individual form was created for each of the municipal website assessed. The websites were analyzed in Romanian language, although the existence of other languages was also assessed as part of a component. Annex 2 presents the code sheet used in the evaluation of each of the cases. In the end the ranking on each component as well as on total points received is being offered, followed by a comparative discussion as well as some recommendations being given.

[4] Romanian National Institute of Statistics
http://www.insse.ro/cms/files%5Cpublicatii%5CRomania%20in%20cifre%202009.pdf (last accessed May 24, 2010)

Chapter 4: Setting the framework for analysis

So far a range of studies that assess e-government services have been conducted, on various samples, ranging from municipalities in a single country (Flak 2005), to worldwide municipalities (Melitski and Holzer 2007; Holzer and Kim 2007).

Flak's study was conducted in the Agder region in Norway and used the MeGAP – 3 (The Municipal E-Government Assessment Project) tool in order to evaluate the level of municipal e-government services. Similarly, Holzer and Kim conducted their study, but at a global level, using the Rutgers-SKKU Municipal E-Governance Survey. The study took into consideration the population size of the cities assessed, the number of online users, and the percentage of population that use the internet in order to select 100 municipalities that represented the study sample.

While diverse assessment tools are used by these studies, such as MeGap – 3 by Flack, Moon 2001 derived instruments by Melitsky and Holzer, or Rutgers-SKKU Survey Index (Holzer and Kim 2007), they are all deriving their methodology from the stages models they base their research on. Having this is mind, the present study will consider the stage models presented above in choosing the components of the assessment instrument used to answer the research question. Each of the components will refer to one of the four stages derived from the literature (stage three and four will be analyzed as one – Advanced Online Sophistication), and in addition to them, a forth component will be added, component that refers to the overall look and content of the website. The following paragraphs will discuss the four components in terms of their relation to the stage models and the services they refer to, while the description of each of the variables will be presented in Annex 1 – Code Book.

Looking at the first stage of all the models presented above, the present study will use as first category the variable "online presence". It includes all the previous terms used to describe stage one, such as catalogue (Layne and Lee), publish (World Bank), billboard stage (Netchaeva) or web presence (Siau and Long). By online presence, it is meant access to online governmental information, such as official reports, documents or publications. The indices that will measure this particular variable are developed from the Holzer and Kim's "Content" component and consist of: Information about the location of offices, Listing of external links, Contact information, City charter and policy priority, Budget information, Documents, reports, or books (publications), Emergency management of alert mechanism, Human resources information, Calendar of events, Downloadable forms. (Holzer and Kim 2007, 97). In addition to these variables, Flak's study includes other indices (in a category named Information Dissemination) that fit well in the "online presence" variable used in this study. In order for a more complex assessment, some of these indices were added to the ones above: News / Newsletters, Demographic info, City plans and maps, Live traffic/ Web cams and Transportation information (Flak 2005, 80).

The second category, Interaction and Transaction Services, can be associated to the second stage model of e-governance. It refers to improvement in the services offered to citizens so that they can access information in the order and form they prefer (customability), participate in discussions and request information. A two – way communication system is describing this stage and the variables under this second component. The variables analyzed under this category are: Discussion forums, On–line surveys/Polls, Zoning lookup, Search engine, Permits application, Online tracking system, Information request, FAQs, Site map and Customability.

As stated above, for the purpose of this particular research (considering that municipal e-government services in Romania are usually not the frontrunners in terms of on – line sophistication), stage three and four identified in the literature will be treated as one that refers to advanced online sophistication. The novelty brought by these two stages refers to transforming the services so that they become integrated in a 'one – stop shop' concept, a portal where all departments are integrated with each other (vertically and horizontally) and the citizens can access various services from different departments starting in one place. The variables identified for assessing the advanced online sophistication level are: Pay utilities, Pay taxes, Pay fines, E-meeting, E-procurement, Business license applications, Streaming meetings, and Access private information.

The forth and last category of the assessing framework does not refer to one of the stages, but to the overall look and content of the website, as although not the most important, it has an effect on the way that e-government services will be perceived by citizens which use them. This last component consists of dichotomous variables scored with the values 0 and 1 from the four point scale used to assess the other components. The last variables included in the study are: Consistent look, Privacy policy, Security Policy, Advertisement free, Accessibility, Multiple languages Feedback mechanisms and the existence of the Last update field.

In total the analysis framework consists of 41 variables in four categories measured on a four point scale (for the first three) and a two point scale (for the last one). The coding book (Annex 1) was created for the operationalization of each of the variables and included a short description of what the variable is assessing in terms of the services offered and the maximum points that can be given to each variable.

At this point, although helpful for the study, the findings could not rely on the number of visitors each of the municipality has, due to differences in the existence of visit counters embedded on the websites. While most of the websites did state the number of total visits, some did not; therefore the study did not take into account this particular dimension when analyzing the assessment sheets.

For an overview of all the categories and the variables used in the study, the following table can be used. It does not include the maximum number of points for each variable, but this information is available in Annex 1.

Table 2: Categories and Variables assessed

Online Presence			
1	Information about the location of offices	9	Documents, reports or books (publications)
2	Listing of external links	10	Emergency management of alert mechanism
3	Contact information	11	Live traffic/ Web cams
4	News / Newsletter	12	Transportation information
5	City code and regulations	13	Human resources information
6	City charter and policy priority	14	Plat maps
7	Calendar of events	15	Downloadable documents
8	Budget information	16	Demographic info
Interaction and Transaction Services			
17	Discussion forums	22	Online tracking system
18	On-line surveys / Polls	23	Information request
19	Zoning lookup	24	FAQs
20	Search engine	25	Customability
21	Permits application		
Advanced Online Sophistication			
26	Pay utilities	30	E-procurement
27	Pay taxes	31	Business license applications
28	Pay fines	32	Streaming meetings
29	E-meeting	33	Access private information
Evaluative criteria			
34	Consistent look	38	Accessibility
35	Privacy policy	39	Multiple languages
36	Security policy	40	Feedback mechanisms
37	Advertisement free	41	Update field

Chapter 5: Findings of the study

As it was already mentioned in the beginning, the following chapter will discuss the results of the assessment and the findings of the study. After each municipality's official website was assessed, the scores for each category were computed and weighted so that each can have maximum 25 points (100 in total). Table 3 presents the weighted results by city, category and total points.

Table 3: Municipality Scores Total and by Category

	Total Score	Online Presence	Interaction and Transaction Services	Advanced Online Sophistication	Evaluative Criteria
Bucuresti	71.86	18.52	21.05	10.42	21.88
Galati	55.91	18.52	14.47	10.42	12.50
Brasov	52.78	18.52	14.47	10.42	9.38
Iasi	52.38	21.30	9.21	12.50	9.38
Constanta	51.82	15.74	13.16	4.17	18.75
Craiova	51.82	15.74	13.16	10.42	12.50
Timisoara	48.52	16.67	7.89	8.33	15.63
Ploiesti	40.53	13.89	7.89	9.38	9.38
Braila	35.63	17.59	6.58	5.21	6.25
Cluj Napoca	32.81	12.96	5.26	5.21	9.38

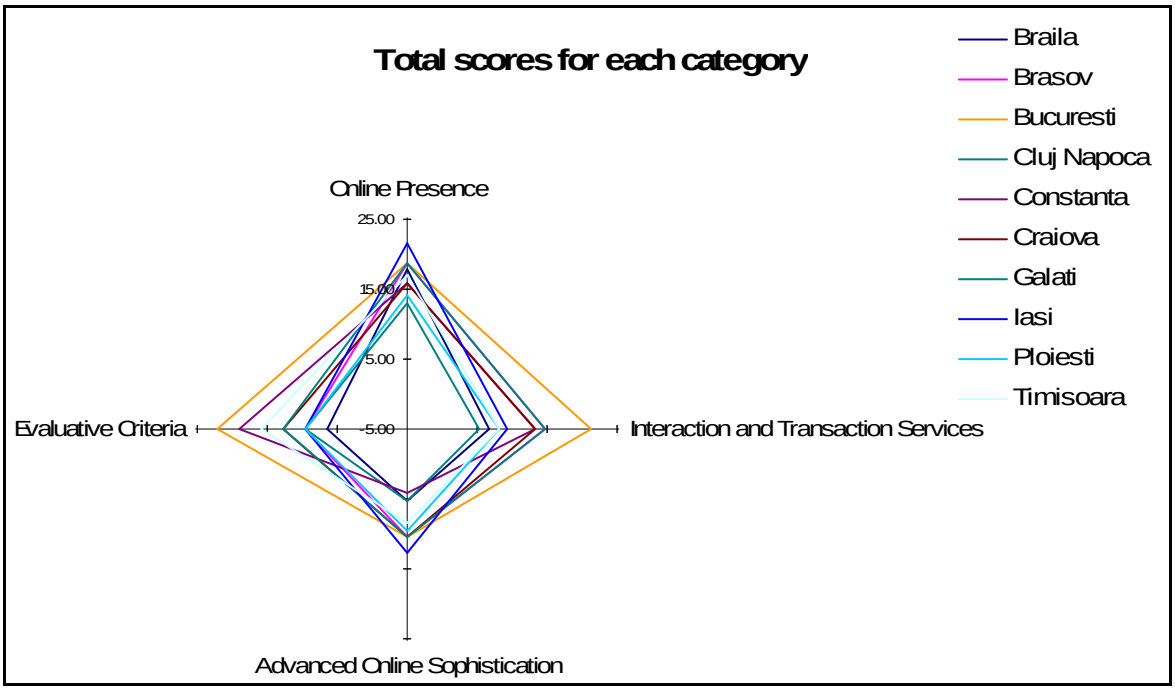
The municipality with the highest score was Bucuresti with a score of 71.86 out of 100 possible, followed by Galati, Brasov and Iasi. Considering the maximum total points, the fact only one city scored close to 100 tells in summary the story of the level at which municipal websites actually are. Five cities scored in the vicinity of 50 and four even lower, with the minimum total points being reached by Cluj Napoca[5] with a score of 32.81.

Figure 1 below shows the graphic representation on the four dimensions (categories) assessed. While Bucuresti scores relatively well in three of the four dimensions, it is easy to see

[5] However, the official website announces a new website. However, it is not functional and therefore could not be assessed. The score received by Cluj Napoca refers to the old website that was not recently updated.

that the others tend to score better on the first dimension: Online Category, while the others have lower and various scores. In terms of the bigger variety of scores obtained, the fourth category, Evaluative Criteria is better represented. The differences among each category will be presented and discussed in the following paragraphs.

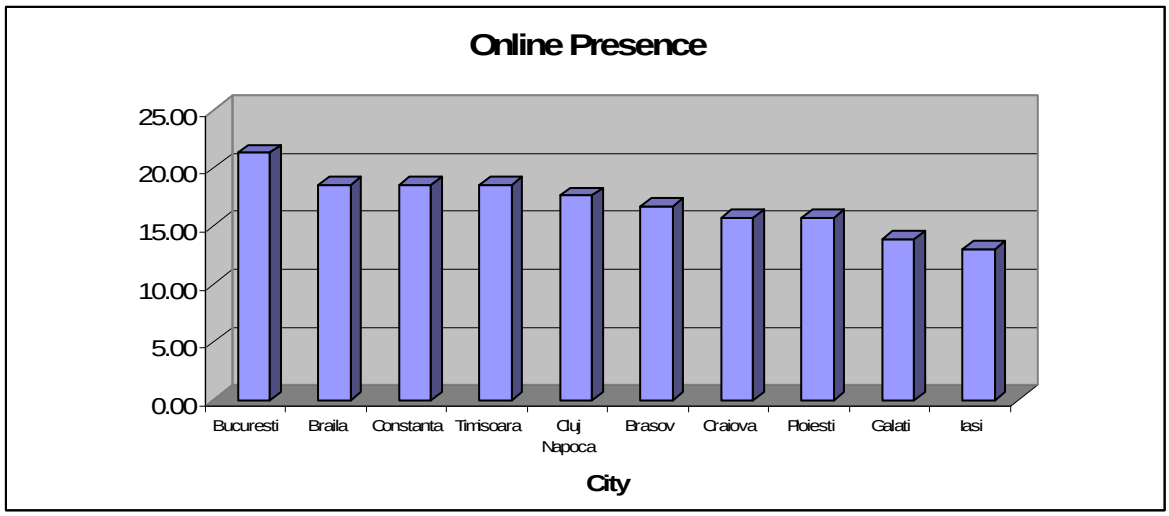
Figure 1: Scores by category



Online Presence

The category describing online presence refers to the first stage of e-government models. As table 3 shows, the scores under this category range from 12.96 to 21.30 out of 25. It is the category most developed and this could be explained by the fact that it represents the first stage only in online sophistication. Figure 2 below shows the scores for each of the ten cities.

Figure 2: Scores by Online Presence



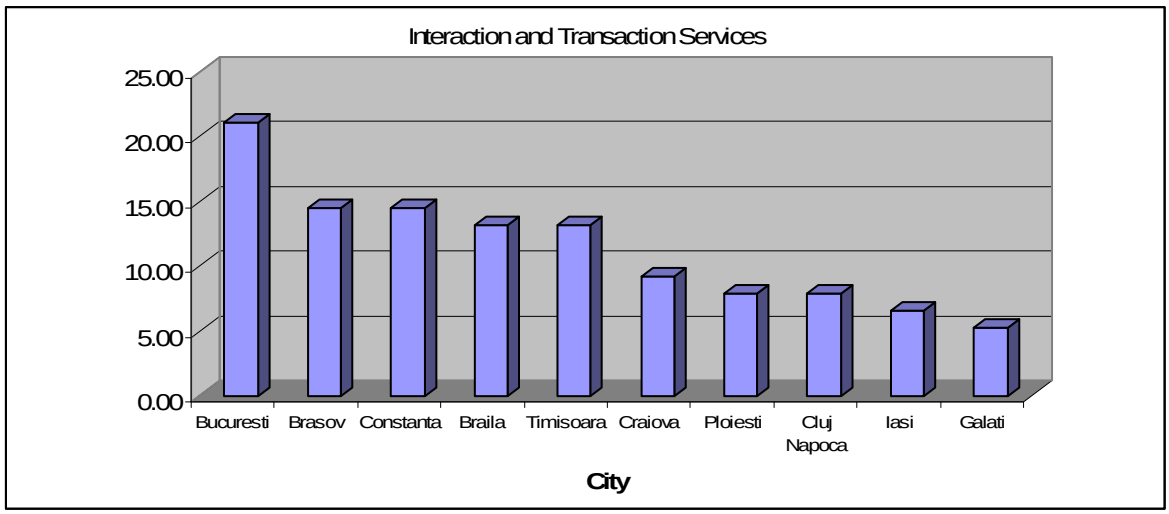
The assessment revealed that some of the variables are presented in all the cases while others only in some and few in none of the municipalities assessed. All the websites have the address and schedule available and easily identifiable. The city charter and development plans, the budget and documents are also available online and for download. Out of all the municipalities, it was the case that one did not have either the listing of external links, downloadable forms, transportation information or city plans and maps. In terms of services missing of scarcely available the study found the calendar of events, emergency and alert mechanisms, live traffic/web cams and demographic info to be the case for the municipalities assessed.

Interaction and Transaction Services

The second stage of the development model was framed under the interaction and transaction services category. The scores in this category ranged from 5.26 (Cluj Napoca) to 21.95 (Bucuresti). Although Bucuresti scores relatively well in this category, most of the cities have very low scores, denoting that the second stage of e-government development has not been

reached yet, and more changes and developments need to be implemented. The scores of each municipality under this category are presented in Figure 3.

Figure 3: Scores by Interaction and Transaction Service

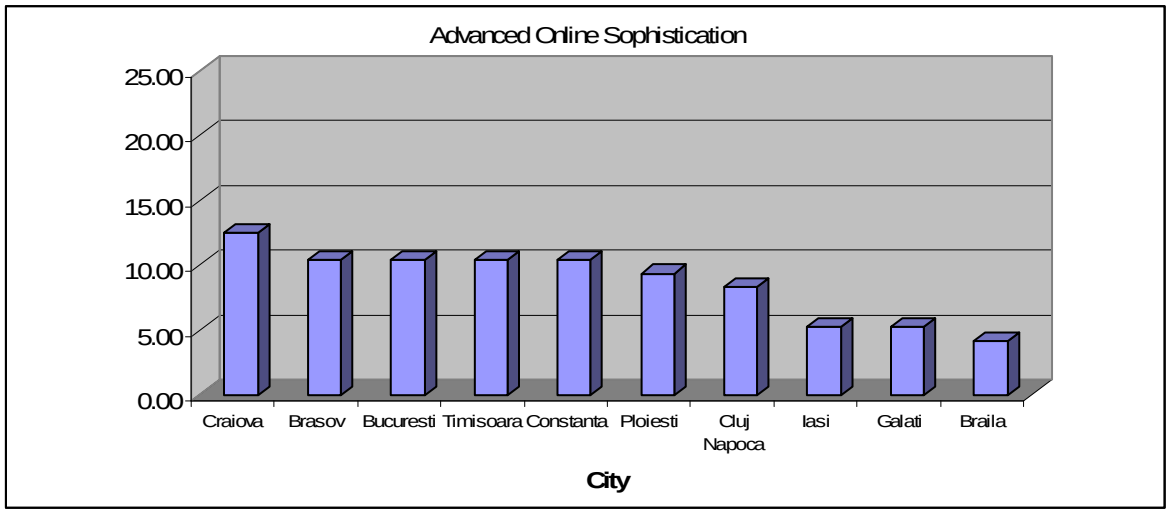


Search engine, Permits application, Information request and Site map are the variables most common among the cases; however, the scores vary greatly between municipalities. Discussion forums are available only in 3 municipalities as well as the Frequently Asked Questions field. The service that none of the websites includes is Customability. Citizens can not customize the websites for their own use, based on the services they use more frequently.

Advanced Online Sophistication

The more the level of development assessed increases, the lower the scores municipalities have are. Under the advanced online sophistication category, figure 2 shows that municipalities are not the most developed. The highest score is 12.5 (Craiova), half of the total possible points, and the lowest 4.17 (Braila). Half of the cities actually score under 10 points. The representation of each municipality's score can be found in figure 4.

Figure 4: Scores by Advanced Online Sophistication



None of the municipality offers the citizens the possibility to pay their utilities online, nor is there information regarding this issue available. However, all municipalities have information on taxes, with nine offering the option to pay online. The option to pay fines online is available only in Bucuresti out of all the cities assessed, while in the others there is nothing available for citizens on this variable. All the other services under this category are found on some websites and with various scores.

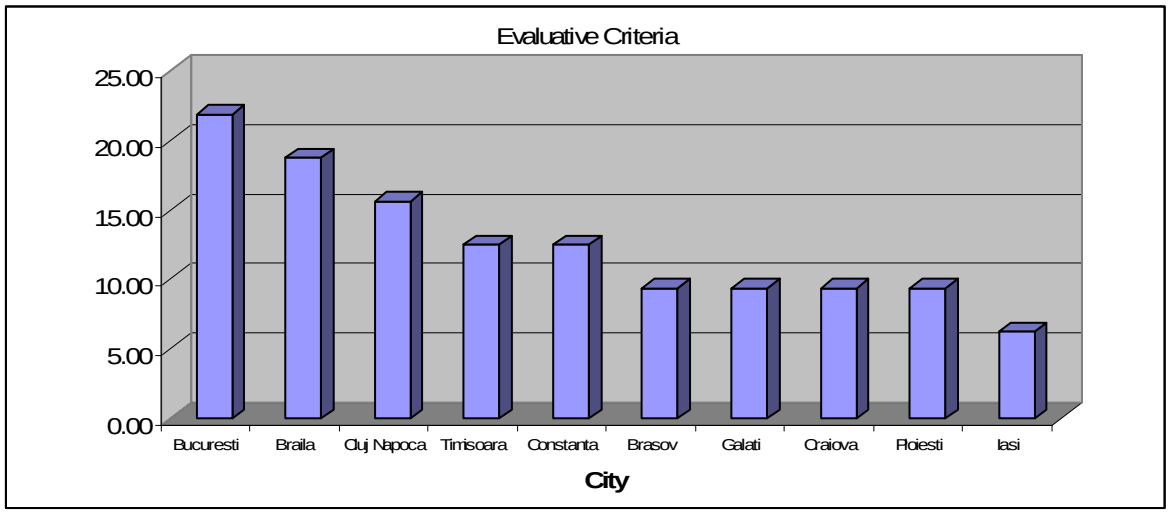
Evaluative Criteria

The last category, as stated in the framework description is not linked to any of the stages, but to the overall look and content of the website. The reason for including it in the assessment was to have an image of how the e-government services could be perceived by the citizens due to the usability and user – friendliness of the website. The take – up can be influenced by this category and for the purpose of the present paper, the author found it important to add. The results alone could represent the starting point for future studies on either website usability or take – up of services in municipal websites.

The websites did relatively well in this category, with only a few issues arising on some of the variables. All the websites have a consistent look, with pages having no more than 3 frames, with constant size and color of fonts. However, when it comes to making the page available for people with disabilities, only two had the option to increase the font size. No other options such as text only pages, text alternatives to images or color schemes were found in any of the websites. Most of the websites have information available in multiple languages, as well as are advertisement free and offer the citizens the possibility to report inaccuracies or errors on the website. Only one of the websites (Bucuresti) has pages on privacy and security policies. None of the others refer to any of the issues of privacy and security. The last variable, update field, is barely found on the websites assessed (four of the ten websites use it).

The ranking of each municipality in terms of the evaluative criteria is represented in Figure 5. Bucuresti is the frontrunner, with an easily accessible page, where information is well structured and easy to find, while Iasi occupies the last position and would need some improvement in the overall look and structure of the website.

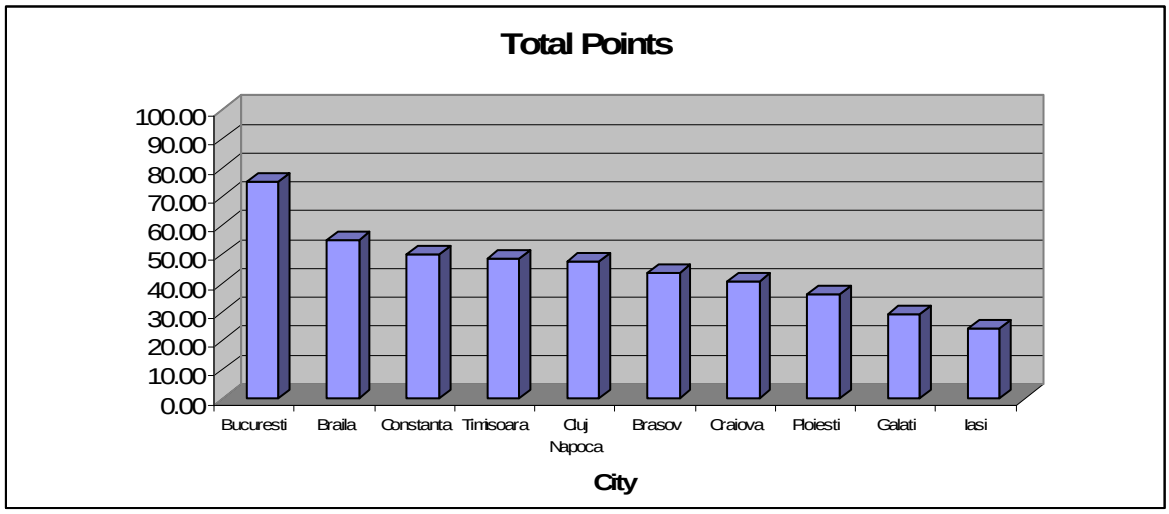
Figure 5: Scores by Evaluative Criteria



Total Points

Lastly, the overall points for each municipality will be discussed in a comparative manner. The cities have scores ranging from a minimum of 31 (Iasi) to a maximum of 74.64 (Bucuresti) out of 100 possible. Bucuresti seems to be the only one who is developing on all categories, having first place in Online Services, Interaction and Transaction Services and Evaluative Criteria and second place in Advanced Online Sophistication. In the same time, Iasi is always at the end of the list (if not with last place, close to it). Based on the distribution of the scores in figure 6, there is a lot of space for improvement in almost all of the municipal e-government websites, in the services offered and in the overall look of the website.

Figure 6: Scores by Total Points



The cities were analyzed based on the total points received and also on individual categories. Although the assessment method is not exhaustive in that it can include more variables and categories (which for the present study due to time and space constraints were not further developed), it shows a picture of the level at which e-government services are to be found at this moment. The findings and the discussions help not only the local authorities in further improving the services offered to the citizens with the help of Information and Communication

Technologies, but the central government as well, in developing and implementing the e-government national strategy.

In the next chapter, the conclusions will be made, as well as some recommendations for local authorities in order for the e-government services to reach a higher level of development and of sophistication. In addition, it will identify further research avenues, based on the findings identified in this chapter, research that would help paint the picture of municipal e-government services in Romania better, as well as understand some qualitative variables that were not studied in the present paper.

Conclusions

The present study discussed the issue of e-government services offered at the municipal level. As stated in the introduction, the use of ICTs (Information and Communication Technologies) for the delivery of public services is becoming more and more popular for at least two reasons: one is the development of the organization, with cost reduction and increased efficiency, while the other refers to the citizens as being treated as a 'customer' and therefore improving his experience with the local government. These reasons have been the basis for developing and implementing e-government services throughout the world. While some nations have started the process right at the beginning of the internet revolution, others have waited (for various reasons) and see themselves now in front of the challenge of adopting and implementing such services. If one thinks purely practically, it could even be better for a country to adopt only now e-government services, as there are best practice examples available, as well as strategies already tested that if considered when dealing with a new, "empty" ground of action, can actually improve the chances of success and lower the possibility of failure.

The country that the study referred to was Romania, having as subjects the biggest ten municipalities. It assessed the level of the services offered to citizens based on a framework developed on the literature presented in chapter 2. The framework included four categories of analysis and 41 variables that offered a better understanding on where Romania is situated in terms of the development of local e-government services. The previous chapter described and discussed the findings of the content analysis carried for each of the municipality. We can next continue with some recommendations for officials at the local level, as well as the national one to

take into consideration when either trying to improve the e-government services, or their own benchmarks and measurements.

The recommendations are offered for the services that the study found to be of particular concern, not existing at all, existing in only one or two cases, or showing a low level of sophistication. The recommendations will follow the structure of the framework and will discuss the services based on the categories they are part of.

First of all, regarding the Online Presence category, only two municipalities had a calendar of events where citizens can get information based on the date of the event. It might be that the local authorities do not consider it necessary when there is a section with all the events. However, the calendar can present the information in a more concise, customabilizable way. The second and most important variable that was not found on any of the assessed websites is the emergency management or alert mechanism. It is a simple set of information that can be related to the department of emergency situations, so that citizens know where to find information, and also status relating to emergencies. An example can be the situation of floods. This service can be especially helpful in the spring and autumn seasons when there are heavy rains.

In regards to the second category, Interaction and Transaction Services, of particular concern is the scarce existence of online discussion forums. Consultations are usually carried offline, however, in addition to them, online forums could bring an increased participation from the citizens that maybe can not attend a certain meeting, but would be able to bring his/her input online. Another aspect that needs creation on all the websites assessed is the customability of the websites. One benefit of e-government is the fact that it is time saving and this can be done if citizens have the option to customize the municipal website based on their needs.

The last two stages of online sophistication were treated under one single category: Advanced online sophistication. Here most of the websites received low scores, due to the level of services that is more advanced in this category, level that the websites did not reach. Recommendations in this category refer to the option to pay utilities and fines online, just like taxes can be paid. Paying fines online is available at the moment in Bucuresti, and this service could be developed further in other municipalities, if they are willing to learn from the experience of Bucuresti. One last aspect under this category is the option of watching streaming meetings of the local council. This variable adds to the one discussed in the previous paragraph (e-meetings) and improves the level of participation and information of citizens by offering them the possibility to follow the work and decisions of the municipality without having to respect the schedule of the institution.

The last two recommendations are drawn based on the results of the last category of the framework, evaluative criteria. First is the lack of accessibility options. The web pages of municipalities should be available for people with disabilities as well, by having the option to change the size and color of the fonts, to have text only information, or to have the photos explained. Out of the ten municipalities assessed, only two had the option to increase the font size, and no other options were available. The last recommendation goes to the issue of privacy and security. In the era that we live in, security and privacy is becoming an important concern to more and more people. Therefore, the services offered through e-government portals should be safe and secure, in order for a good take up of services to exist.

The present study created an overall look of the level of e-government services in ten big cities in Romania, ranking the cities based on the level of the services offered. Due to time and space reasons, it did not go into qualitative details, which would illustrate in addition to the levels

of services, the reasons why some municipalities are doing better than others, and would help build further strategies of developing and improving e-government services.

One example of such study would be to link the data found in this research with the overall economic performance of the city, and to look whether the businesses present locally are influencing the level of e-government services in any way. The study of e-government in Romania is in the beginning phase, however, it is growing and especially under the European Union framework, it will become more and more important in Romania as well. These studies will not only contribute to the literature in the field, but also to a better development of e-government services and of the information society in general.

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Annex 1: Code Book

Category	Code	Variables	Description	Maximum Points
Online Presence	1	Information about the location of offices	Address of city hall as well as schedule is available	1
	2	Listing of external links	Links to other governmental departments and offices available	1
	3	Contact information	Phone and fax number, email address	2
	4	News / Newsletter	News category, subscription to newsletters	2
	5	Downloadable documents	Ability to download documents from the website	2
	6	City charter and policy priority	City developing plans, charters, policy documents	2
	7	Calendar of events	Calendar	2
	8	Budget information	Available budget of municipality	2
	9	Documents, reports or books (publications)	Documents	2
	10	Emergency management of alert mechanism	Rain, snow, roads alerts, etc	2
	11	Live traffic/ Web cams	Live traffic info, maps, video	2
	12	Transportation information	Transportation company information, maps, schedules	2
	13	Human resources information	Organigrams, Job opportunities, calls, etc	2
	14	City plans and maps	City maps	2
	15	Demographic info	Population size and indicators	1

Category	Code	Variables	Description	Maximum Points
Interaction and Transaction Services	16	Discussion forums	Forums available to citizens supervised by the municipality	2
	17	On-line surveys / Polls	Surveys and polls on policy issues for citizens	2
	18	Zoning lookup	City areas, postal codes, etc	2
	19	Search engine	Search engine	1
	20	Permits application	Various permits application procedure online	2
	21	Online tracking system	Tacking system for petitions, forms, documents, etc	1
	22	Information request	Freedom of information act request online, as well as other related requests	3
	23	FAQs	Frequently Asked Questions page	2
	24	Site Map	Section with all pages of the website in linking order	2
	25	Customability	Ability to customize pages	2
Advanced Online Sophistication	26	Pay utilities	Pay utilities online	3
	27	Pay taxes	Pay taxes online	3
	28	Pay fines	Pay fines online	3
	29	E-meeting	E-meeting are organized and help with the use of ICT	3
	30	E-procurement	E-procurement	3
	31	Business license application	Business related application: sending documents and applying online	3
	32	Streaming meetings	Streaming videos of council / city hall meetings	3
	33	Access private information	User account (log in and password) requested for private information	3

Category	Code	Variables	Description	Maximum Points
Evaluative Criteria	34	Consistent look	Pages of reasonable length (2-3 frames), constant fonts and size	1
	35	Privacy policy	Available privacy policy	1
	36	Security policy	Available security policy	1
	37	Advertisement free	Lack of advertising pop-up windows, banners	1
	38	Accessibility	Accessible and inclusive pages for users with disabilities (bigger fonts, simple images, text alternatives to images, etc)	1
	39	Multiple languages	Language selector with information / services in selected language available	1
	40	Feedback mechanisms	Possibility to report inaccuracies, errors, etc	1
	41	Update field	Date of the last page modification and of the information entered available	1

Scale	Description
0	Information about a given topic does not exist on the website
1	Information about a given topic exists on the website (including links to other information and e-mail addresses)
2	Downloadable items are available on the website (forms, audio, video and other and other one-way transactions, popup boxes)
3	Services, transactions, or interactions can take place completely online (credit card transactions, applications for permits, searchable databases, use of cookies, digital signatures, restricted access)

Annex 2: Code Sheet

City_____
Website _____
Number of visitors _____

Category	Variables		Score	Value
Online Presence	1	Information about the location of offices		
	2	Listing of external links		
	3	Contact information		
	4	News / Newsletter		
	5	Downloadable documents		
	6	City charter and policy priority		
	7	Calendar of events		
	8	Budget information		
	9	Documents, reports or books (publications)		
	10	Emergency management of alert mechanism		
	11	Live traffic/ Web cams		
	12	Transportation information		
	13	Human resources information		
	14	City plans and maps		
	15	Demographic info		_____
Interaction and Transaction Services	16	Discussion forums		
	17	On-line surveys / Polls		
	18	Zoning lookup		
	19	Search engine		
	20	Permits application		
	21	On-line tracking system		
	22	Information request		
	23	FAQs		
	24	Site Map		
	25	Customability		
Advanced Online Sophistication	25	Pay utilities		
	26	Pay taxes		
	27	Pay fines		
	28	E-meeting		
	29	E-procurement		
	30	Business license application		
	31	Streaming meetings		
	32	Access private information		
Evaluative Criteria	33	Consistent look		
	34	Privacy policy		
	35	Security policy		
	36	Advertisement free		
	37	Accessibility		
	38	Multiple languages		
	39	Feedback mechanisms		
	40	Update field		_____

Annex 3: Assessed Municipalities

City	Website
Braila	http://pmb.braila.astral.ro/.
Brasov	http://www.brasovcity.ro/.
Bucharest	http://www.pmb.ro/.
Cluj-Napoca	http://www.primariaclujnapoca.ro/.
Constanta	http://www.primaria-constanta.ro/.
Craiova	http://www.primariacraiova.ro/pcv/servlet/portal.
Galati	http://www.primaria.galati.ro/.
Iasi	http://www.primaria-iasi.ro/.
Ploiesti	http://www.ploiesti.ro/.
Timisoara	http://www.primariatm.ro/.