MINISTRY OF NATIONAL EDUCATION
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Contributions regarding the importance of implementing e-Governance processes on a national level

Abstract of Doctoral Thesis

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INTRODUCTION

In the current context of the contemporary society, of the information society, in the context of the emergence of a new decade of the 21st century, of a new geographical expanse of the European Union (Croatia, 2014), of a shift of the political paradigms and the balance of power, more and more aspects of the civil life and personal life are now cybernated/digitized and performed with the help of electronic devices.

Hence, in consideration of these premises, we can state that the daily presence of electronic services led to the building of a new social order, which, in its turn, created a generation of citizens who are acquainted with the services and operations of an information society – the so-called "digital natives"[1].

By diminishing the research area, we believe that the performance of the hereby study is edifying, a study which reveals the importance of e-services in the Romanian contemporary society and which also tries to debate the problem of the so-called "digital divide" – the gap of IT knowledge which is represented, unfortunately, by a majority of the Romanian citizens.

According to the *Digital Agenda Scoreboard*[2] *- the "Report of the degree of internet usage and the digital skills of Romanians"* reveals a concerning aspect, considering the fact that only 43% of the country's population regularly uses the Internet (at least once a week), which represents a very low score if we take into consideration the EU average of 70%.

As a result, the opportunity of performing an in-depth analysis of the situation and foreseeing a possible future situation based on the prior analysis is imperative in this field.

Therefore, the hereby paper uses established research methods, such as *the investigation* as a transversal method, *the case study* as a longitudinal method, and *the structured interview* as a quantitative method. Moreover, the paper also benefits from a complex *SWOT analysis* of the cross-border pilot projects co-financed by the European Commission.

The doctoral thesis is structured in five (5) chapters extending over approx. 150 pages which include 40 images, 3 tables, 90 bibliographic references and 3 annexes.

Chapter 1, titled "e-Governance, e-Readiness and digital governance models on a global level", is dedicated to a short, but comprehensive analysis of the level of implementation of electronic services on the global level (with an emphasis on the United States of America). Considering the fact that the entire thesis is built on the so-called "large to small" model, the author's endeavour to start the analysis of the proposed themes with the "global level" and to finish with the case study on a "national level" is only natural. Moreover, this chapter also acts as an introduction in the field of e-Governance, defining a series of universally valid related concepts.

Chapter 2, titled "The European legislative context for electronic services market and the national digital profile", presents and analyses the current stage of the digital profile of Romania and the interconnection between it and the skill level of Romanian citizens, as opposed to the level of EU citizens. All of these observations are registered in the study under the main document based on which Europe was digitized: the Digital Agenda for Europe 2020.

Chapter 3, " Electronic service models on a cross-border level in the European Union", is centered on the analysis of cross-border pilot projects which are co-financed by the European

[1] http://workdesign.co/2012/02/digital-natives-a-tech-savvy-generation-enters-the-workplace/;

[2] https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/RO%20internet%20use_0.pdf;

Commission. This section of the paper also includes the SWOT analysis of the mentioned projects, thus revealing both the obvious benefits of the implementation of e-Governance services in the European Union and the opportunities, threats and possible negative effects with which the public administration authorities are faced during the implementation process.

Chapter 4, "Case study of the stage of the implementation and importance of electronic services on a cross-border level in the European Union and in Romania", is dedicated to Romania's input and involvement in the implementation of pilot projects. Moreover, this chapter includes the research methods (investigation, case study and structured interview) used to investigate in depth the researched situation on a strictly national level.

Finally, Chapter 5 synthesises the conclusions resulting from the research performed, as well as the original contributions brought throughout the entire paper, underlining several directions in this field open to other future approaches. Moreover, a synthesis of the ways in which the results of these studies and researches were capitalized is presented.

The doctoral thesis includes some original approaches, specific to the activity of managing projects co-financed by the European Commission, which were based on vast documentation and experience gained by the author throughout the activity she performed for approximatively 7 years within the National Institute for Research and Development in Computer Science ("Institutul Național de Cercetare-Dezvoltare în Informatică") in Bucharest, in the "European projects" collective. This privilege granted the author the possibility of accumulating a vast source of information, as well as the opportunity to propose and implement solutions for the purpose of improving the work methods.

CHAPTER 1: e-Governance, e-Readiness and digital governance models on a global level

1.1. Digital governance models

1.2.1. The broadcasting dissemination model

This model is based on the transmission or dissemination of useful information from the governance process, information which already exists in the public domain, to a wider public domain, by means of ITC or convergent environments. Through this model, the government can increase the diffusion of information in order to obtain transparency in the relations with the citizens and with the business environment and to promote obtaining an informed opinion. The higher the information level, the more attentively decisions are made.

1.2.2. The critical flow model

This model is based on the transmission and dissemination of information with critical value for a target-audience through ITC or other convergent environments. According to this model, governments must define a set of information and their associated values for target users, as well as the processes and instruments through which it is distributed. The information and communication technologies offer interesting opportunities for the identification and management of target profiles (for instance, creating reserved domains on the Web), as well as the protection of information against unauthorized access.

1.2.3. The comparative analysis model

This model is based on using ITC in exploring the information available in the public and private domains and comparing it to a set of known information.

The positive result of this model is learning based on strategy and arguments. Essentially, the model continuously assimilates the best practices in various fields of governance, which it then uses to evaluate other governance practices. Afterwards, it shall use the result to encourage positive changes and to influence the public opinion on these governance practices.

1.2.4. The lobby and pressure group model

This model is based on establishing a plan and an oriented flow of information for building a powerful virtual alliance which shall complete the real world actions. Virtual communities are formed based on sharing the same values and interests and these communities, in their turn, are associated in real life to groups or activities for concerted actions.

1.2.5. The interactive service model

This model opens new ways for the direct participations of individuals in the governance processes. Fundamentally, ITC has the potential of bringing any individual to the electronic network and to allow a flow of interactive information between them. In this model, governance is based on ITC, which confers it a more objective and transparent nature in the decision-making processes.

1.2. Conceptual approaches

According to the OECD (the Organisation for Economic Co-operation and Development[3]), e-Governance is the use of information and communications technology, especially the Internet, as an instrument for achieving a better administration.

Measuring the quality of a service provided by e-Governance is particularly important, since most public administrations have the major objective of improving the quality of services provided to citizens. The quality standards vary from service to service or from instution to institution. Polls with the subject of e-Governance must be performed constantly in order to find out the citizens' degree of satisfaction. As a result of these polls, the evolution of expectations and habits in the environment of public services can be discovered. For evaluating the e-Governance services, both quantitative and qualitative indicators are used. These have the purpose of portraying as best as possible the diversity and complexity of the services used.

The history of the development of the concept of e-Governance is deeply connected to the history of the global information society, while the defining elements of the strategy and policies for the knowledge-based society imply the development of the communications infrastructure, creating adequate software instruments, developing digital content and, in particular, creating the abilities to use information and to capitalize it for personal use.

The desired effects were partially obtained. Creating information systems based on the new technologies in all fields of activity has obviously become a mandatory requirement imposed by social and economic development on a global level.

i2010 emphasized the development of digital economy. In accordance with this strategy, the European Parliament and the Council of Europe established a multiannual program, a calendar for accessible and usable digital content in Europe. The main objective for eContent is the dissemination of information in the field of public interest. eContent and the i2010 strategy have the purpose of eliminating the so-called "digital divide", in fact, the

[3] http://www.oecd.org/;

diminishing of discrimination between those who know how to use the computer and can use it and those who don't know how to use it or can't use it because they don't have the means to do it, a situation generated by the economic and social effects over the environment in which they live.

1.3. The i2020 digital agenda

The Digital Agenda for Europe (DAE)[4] is one of the seven pilot initiatives of the Europe Strategy 2020[5] and has the purpose of defining the essential role that using the information and communications technology (ITC) shall have to play in achieving the objectives of the European Union for the year 2020. DAE was launched in May 2010 and was created to maximize the use of digital technologies by EU citizens and entrepreneurs, considering the fact that the so-called "digital economy" is growing seven times faster than the rest of the EU economy.

1.4. Electronic governance evaluation indicators

1.4.1. Quantitative indicators

- *the number of public institutions registered in the system* - for measuring the increase of public institutions in the system;
- *the number of companies, registered sole traders or natural persons registered in the system* – for measuring the increase in the number of users using the system;
- *the number of services offerred in the system* – for measuring the increase in the number of services in the systems.

1.4.2. Qualitative indicators

- *degree of sophistication*, from level 1 (information) to level 5 (personalization, proactivity);
- *the availability of the service*, the degree to which a system is operable, 24/7 online service;
- *the accessibility of the service*, equal access – equal opportunities, design characterized by flexibility in responding to the different needs of the users.

1.5. Performance indicators

- the degree of online availability;
- the sophistication degree of the electronic public services;
- the number of users of the electronic public services;
- the number of electronic public services used and their degree of usage;
- the accessibility of the electronic public services, multilingualism;
- the duration for covering the users' needs, by using the electronic public services;
- the security and reliability degree of the electronic public services;
- the level of e-Governance brand reached, for electronic public services (the general assessment of services).

[4] http://europa.eu/legislation_summaries/information_society/strategies/si0016_ro.htm;

[5] http://ec.europa.eu/europe2020/index_ro.htm;

1.6. The concept of e-Readiness in electronic governance

The models described in the previous chapters indicate different complexity levels of the electronic governance, corresponding to the increase of the complexity of governance strategies – from the broadcasting model, through which information is merely disseminated, to the models based on community interaction. In order to have a better understanding of governance strategies in terms of difficulties and opportunities, weak points and strong points, an analysis of the trends of initiatives in this field is required.

CHAPTER 2 The European legislative context for the electronic service market and the national digital profile

2.1. The Services Directive (123/2006)

The European Services Directive (123/2006) establishes a general legal framework regarding services and takes into consideration each type of activity or profession. The directive tries to offer a unitary regulation system. In 2006, it had the goal of contributing to a gradual and coordinated modernization of the national regulation systems for all service activities.

The provisions of this directive consider the creation of a European free market for services in places where the market needs to be opened up to competition. It strictly addresses service providers established in a member state and does not breach in any way the agreements established by the bodies or by other international structures which deal with service trading.

According to the studied specialty literature[6], governance based on new technologies represents the ensemble of systems and resources specific to public management, which have the objective of optimizing the administrative activity by using the new information and communications technologies. In the specialty literature, governance based on new technologies is considered to be sufficiently represented by the so-called temple of electronic governance. In fact, eGovernance represents an increase of the quality and accessibility of governmental services for citizens, for the business environment, for public servants and for the various structures of the central public administration on one hand and of the local public administration on the other.

The specialty literature uses the following terms:

- G2C – Government to citizen;
- G2B – Government to the business environment;
- G2E – Government to public servants;
- G2G – Government to government.

[6] BANCIU D., ***e-Taxe prin InfoChioşc – Plata taxelor şi impozitelor prin sisteme electronice*****.** Bucharest: Editura Tehnică, 2002.

BANCIU D.; MANDA C.; MANDA C. C.; *Administraţia publică şi cetăţeanul: autorităţi, servicii, informaţie publică*, Bucharest: Editura Tehnică, 1997.

BANCIU D.; NICA D., ***Le gouvernement electronique. Concepts appliques en Roumanie*****.** Bucharest: Editura Tehnică, 2005.

2.2. The Digital Agenda for Romania

"Europe 2020", the UE growth strategy for the next ten years, which was launched in 2010, refers to the deficiencies in the growth models of Europe and proposes to create the conditions of a more intelligent, durable and inclusion-favorable environment. "The National Strategy on the Digital Agenda for Romania 2014-2020" was developed based on the program Digital Agenda for Europe 2020, which is the reference framework for the development of digital economy in the next seven years (2014-2020). Achieving the objectives in the fields of action described within the Digital Agenda imposes cumulated efforts from all environments, national decision factors and opinion makers. Thus, Romania must consider the maximization of the impact of public policies and to regard ITC investments as a way of transforming the Romanian economy.

2.3. The analysis of the current stage of the national digital profile

Citizens of the European Union have the benefit of basic digital services and networks, but, according to the analyses, reports and studies performed[7], they are deficient regarding the main and future benefits of the so-called "digital revolution" because of the existing problems of the telecom market in Europe.

2.3.1. Broadband markets in Romania[8]

Unfortunately, in terms of the availability of fixed broadband networks, Romania's score is relatively low, but, in terms of the availability of access to next generation services, it is better than the EU average, while its ultra-fast broadband (minimum 100 Mbps) access is one of the highest in the EU. Moreover, Romania has the lowest usage rate for fixed broadband networks and the score regarding the access to mobile broadband networks is one of the lowest in the EU.

2.4.2. The online activity and the digital skills of the Romanian users

The EU economy has been affected by recession beginning with 2009, continuing until the present day. According to the latest statistics provided by the European Commission, the annual GDP is expected to drop during 2014 by 0.1% in the EU and by 0.4% in the euro area. Unemployment is at an unacceptable level in many of the member states, especially where youth is concerned. Compelled by the high degree of debt, national governments are pressed to reduce public expenses.

2.4.2.1. Internet use

In 2012, the regular (at least once per week) Internet usage rate in Romania was 43% of the total population, significantly below the EU average of 70%. However, this represents an important growth (six (6) percentage points) of the regular usage rate compared to 2011 and it also represents an important step in aligning Romania with the EU average. Still, the regular Internet usage rates of the member states which lead in this ranking are around 90%, therefore a continuous long-term effort is required in order for Romania to reach appropriate levels. In addition to that, according to statistics, it seems that 48% of the population has never used the Internet, which is more than double of the average EU rate of 22%, although a significant decrease (of about 6 percentage points) of the number of non-users was registered

[7] EU Scoreboard: Annual digital progress rankings: http://europa.eu/rapid/press-release_IP-13-528_en.htm;

[8] https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/RO%20%20-%20Broadband%20markets_0.pdf;

in comparison to the previous year, thus proving that Romania is registering very good progress in connecting its population to the Internet networks.

2.4.2.2. Digital skills/ITC skills

Considering the fact that only 35% of Romanian citizens have some level of computer skills, we can state that this percentage is the lowest rate of computer skills in the EU, being significantly lower than the average of 67%. In addition to that, the computer skills rate has dropped by approximatively four (4) percentage points in comparison to 2011.

2.4.2.2.1. ITC in Romanian schools

Regarding the indicator "ITC infrastructure in the Romanian education system", sadly, Romania does not occupy one of the dominant positions (position 24 out of 27 EU member countries – excluding Croatia).

In the same middle school education level, the number of students who use a computer (laptop or desktop) connected to the Internet is, on average, of about 250 students per laptop, respectively 18 students per desktop. These numbers contrast with the EU average of 14 students per laptop with an Internet connection, respectively 7 students per desktop with an Internet connection.

Romania is on a par with the EU average regarding the confidence of teachers in their operational skills, as well as their social media skills, both for fourth grade teachers and eighth and eleventh grade teachers. The students' situation is similar, as they are highly confident in their own operational and social media skills, similar to the confidence on the EU27 level, of approximatively 2.46%.

2.4.2.2.2. e-Commerce

Similar to the majority of EU member states, Romanian citizens make online purchases for products and services from national producers/sellers, as follows:

- 5% of Romanian citizens have made online purchases from national sellers;
- 1% have made online purchases from other EU countries.

The EU average for online purchases from national sellers is of 41%, in comparison with 11% for non-national sellers. However, the highest online commerce usage rates are of nearly 70%, which is almost 12 times the rate observed here.

2.4.2.2.3. e-Governance in Romania

The synthetic report of the European Commission[9], regarding the degree of implementation and maturity of the governance based on new technologies (e-Governance) in Romania, has the purpose of bringing the current state of play of e-Governance at a national level to the attention of regulation authorities and institutions.

Therefore, after a brief, but concise introduction to the country profile (following indicators such as population, GDP per capita, broadband connection, unemployment rate, number of companies existing on the market, number of start-ups, number of students), color

9 http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?action=display&doc_id=5567;

coordinated in comparison with the UE27+[10] average, out of which a negative situation results only regarding the unemployment rate, which is revealed as being significantly higher than the EU27+ average, we deduce the real situation of electronic governance in Romania.

The report presents important aspects of the performed analysis, such as:

1. the degree of maturity of the implementation of electronic governance on a national level, according to fields;
2. cross-border mobility;
3. governmental transparency;
4. user-oriented governance;
5. the efficacity degree of the governance;
6. "key enablers".

2.4.2.2.4. Research and Development in Romania – participation in the Framework Programme 7 (FP7)

A. Expenses for ITC research and development

In 2011, ITC research and development (according to ICT GBAORD[11]) in Romania were financed from the state budget with 27.3M€, which represented 7.6% of the total public research and development financing, which amounts to 0.23% of the GDP, percentage which is below the EU average of 0.6%.

B. Participation in the ITC field in FP7

In the period 2007-2012, Romanian organizations have participated in 98 projects for Research & Development in ITC (0.5% of the total) and have coordinated a single project, thus accumulating a total of 18.9M€ financing from CE[12] (0.3% of the total financing).

2.5. Conclusions

In the second chapter, the discussion moves from the "global dimension" of *e-Services* to their "European/national dimension" by presenting and describing in detail the initiatives of the European Commission which dictated the digitization of public administration in the entire EU.

Thus following the imposed "top-down" model, this chapter was dedicated to presenting the European level of digitization of the services of public administrations and authorities, also benefitting from an analysis at the level of Romania which is, naturally, the next step in the approached research.

CHAPTER 3 Electronic services models on a cross-border level in the European Union

3.1. The current stage of electronic services on a cross-border level in the European Union

The action plan of the European Commission for the period 2011-2015 regarding electronic governance[13] was created and is currently in the process of being implemented throughout the entire EU territory, with the purpose of supporting the provision of a new

[10] UE27+ - EU member states (except Croatia) and the associated/candidate states (Iceland, Norway, Turkey);

[11] http://ftp.jrc.es/EURdoc/JRC69978.pdf;

[12] Amount cumulated for the years 2007-2012.

[13] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0743:FIN:EN:PDF;

generation of electronic governance services for the citizens and administrations of the European Union.

Thus, the plan identifies four political priorities, based on the *Malmö Declaration*[14]*:*

1. the responsabilization of citizens and entrepreneurs regarding the use of electronic services;
2. consolidating mobility in the internal market;
3. activating efficiency and efficacity;
4. creating key elements and pre-conditions necessary for allowing the involved actors to act.

3.2. Study regarding the analysis of the need for cross-border services and evaluation of the organizational, legal, technical and semantic barriers existing in the European Union

Taking into consideration the fact that especially large benefits may be obtained by using ITC for the development/implementation of digital public services (e-Governance services) on a cross-border level, it was acknowledged, as a result of the performed study, that many online public services were not working across the physical borders of the member states or implied procedures much too cumbersome to be accessible, thus reducing the mobility of entrepreneurs and citizens.

As a result, the Digital Agenda for Europe and the European eGovernment Action Plan 2011-2015 have the common purpose of facilitating the following aspects:

- establishing and conducting a business, wherever in Europe, independently of the initial location;
- mobility for performing studies, wherever in Europe, independently of the initial location;
- mobility for employment, wherever in Europe, independently of the initial location;
- mobility of the domicile, wherever in Europe, independently of the initial location;
- the possibility of retiring wherever in Europe, independently of the initial location.

3.3. Launching and implementing the pilot projects on a cross-border level

Considering the studies performed and the results revealed by them, starting in 2009, through the co-financing program *CIP-ICT-PSP*[15] *- ICT Policy Support Programme as part of the Competitiveness and Innovation framework Programme (CIP),* the European Commission launched a series of large scale pilot projects which had and have the main purpose of creating and developing IT solutions (software) whose implementation in the public authorities of the European Union led[16] and shall lead to the dissolution of digital barriers in the EU.

Taking in consideration the results of the studies performed and the necessities of a growing population, as well as the fast emergence of the following decade of the 21st century,

[14] https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/ministerial-declaration-on-eGuvernare-malmo.pdf;

[15] http://ec.europa.eu/information_society/activities/ict_psp/about/index_en.htm;

[16] http://ec.europa.eu/digital-agenda/en/news/simple-procedures-online-cross-border-services-%E2%80%93-digital-barriers-taken-down;

the European Commission initiated the co-financing of the first pilot projects in the most stringent/important fields from a digital standpoint:

- e-Identification – e-ID;
- e-Health;
- e-Procurement;
- e-Justice;
- e-Business.

Currently, three LSPs (large-scale projects) are still under way:

- **e-SENS** - "European Simple Electronic Networked Services";
- **e-CODEX** - "e-Justice Communication via Online Data Exchange" ;
- **STORK 2.0** - "Secure IdenTity AcrOss BoRders LinKed";

and four are completed:

- **SPOCS** - "Simple Procedures Online for Cross-border Services";
- **epSOS** - "European Patients – Smart Open Services";
- **PEPPOL** - "Pan-European Public Procurement Online";
- **STORK** - "Secure IdenTity AcrOss BoRders LinKed".

These software solutions represent the dissolution of digital borders in Europe, many years after the elimination of physical barriers.

3.3.1. "e-Justice Communication via Online Data Exchange" - e-CODEX

The purpose of the *e-CODEX* project is to improve the cross-border access of citizens and enterprises/entrepreneurs to legal services across the entire territory of the European Union, as well as to improve the interoperability between the legal authorities in the EU.

3.3.2. "Secure IdenTity AcrOss BoRders LinKed" – STORK/STORK 2.0.

The purpose of the *STORK* project and of its successor, *STORK 2.0*, is to establish an European interoperability platform type *eID – e-Identification*, which shall allow citizens to establish new e-relations (obtaining university credentials for studies performed abroad, debt collection, etc.) outside the borders, by merely scanning the national identity cards.

3.3.2.1. The user-focused approach, a way of representing the confidentiality guarantee

The purpose of the STORK platform is the identification of a user who is in an online session with a service provider and the transmission of the user's personal information at the request of the respective service. While the service provider may request different types of information, the user shall always control the information to be sent. The express consent of the holder of the information, the user, is always required before his or her information may be sent to the service provider requesting it.

The platform shall never store personal information, therefore there is no information which can be lost or sent somewhere else.

3.3.3. „European Patients – Smart Open Services" – epSOS

The *epSOS* project tries to provide (through its results) cross-border medical care for European citizens.

The main objectives of the project are:

- improving the quality and safety of medical care for citizens traveling to another European country;
- developing a practical cross-border *e-health* framework and an ITC infrastructure which shall allow the secure access to information referring to the patient's health between the different medical systems in Europe.

3.3.4. „Pan-European Public Procurement Online" - PEPPOL

The Pan-European Public Procurement Online - *PEPPOL* – was a pilot project jointly financed by the European Commission and the member institutions of the *PEPPOL* consortium.

3.4. The SWOT analysis of the large scale pilot projects financed by the European Commission

In order to increase the efficiency of the results of the hereby research, the performance of a SWOT analysis was believed to be imperatively necessary. Therefore, the hereby study was able to benefit from one of the most important management techniques, which can establish the strategic position of an organization or, as the case may be, of the national implementation of an European Commission financing program (CIP-ICT-PSP through LSPs).

S Strengths - support for implementing e-services on a European level; - support for fulfilling the objectives of the Digital Agenda.	**W Weaknesses** - lack of an adequate legislation for imposing the procedures for electronic services in every EU member state; - the existence of the digital divide; - medium/high costs for implementing the results; - drop in Research & Development investments; - decrease of the GDP percentage assigned to the Research & Development sector; - inexistent/insufficient innovation infrastructure for the performance of the technology transfer to the SME sector.	**INTERNAL FACTORS**
O Opportunities - creating a new generation of digital natives; - support for digitizing the European population.	**T Threats** - accelerated aging of the population and reticence to change; - the inexistence of a culture for implementing the results of large scale European projects; - a relatively low scientific community.	**EXTERNAL FACTORS**
+	**-**	

Image 3.1. SWOT analysis of the cross-border pilot projects co-financed by the European Commission.

3.5 Short history of implementation e-Governance in Romania and legislative frame that lead to transposing to reality

3.5.1. Selective list of national legislation for e-Governance

As it is known and as was established into previous chapters, e-Governance means offering of public services in electronic form for citizens and business environment. Assurance of permanent availability of public information by Internet had always represented and still represents one of the Priority of Romanian Government.

Offering of public services in electronic form represents a more efficient and cheaper method which allows to Government to be closer to citizens and to adapt its services according to requests of citizens. As results, the sites of ministries help the direct access to public information or for employees of different departments.

Strategy of e-Government of Romania includes a combination of the following elements:

- Encouraging of competition on telecommunication market;
- Transformation of the government by information technology and "*e-business*";
- Performance of public acquisitions in electronic form;
- Bringing on the investments into fields as communications and information technology[17].

3.5.2. Chronology of implementation of e-Governance processes on national level into background of adherence of Romania to EU.

The coordination at strategic level and integration of national information systems has been assured, on governmental level, by *Group for promotion of information technology (GPTI)* and *MCTI*, starting with 2001 until the moment of adherence of Romania to EU, in 2007.

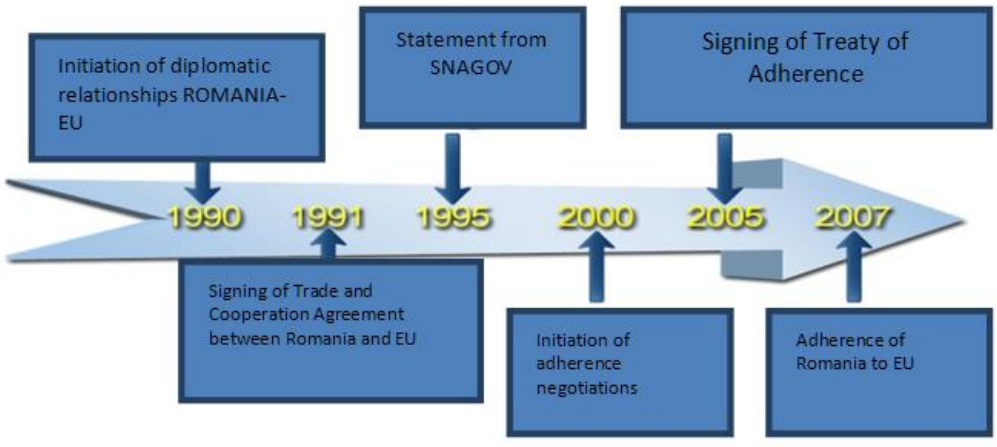

Image 3.2. Chronology of Romania's adherence to the EU

3.5.3. Recommendations of European Union regarding the basic public services in electronic format (e-Governance)

[17] *Grupul pentru Promovarea Tehnologiei Informaţiei, e-Guvernare: de la concept la realitate*, Government of Romania, Romania in an Information Society, Bucharest, December 2001;

European Community has suggested a list of 20 basic public services, which will be included along with services offered by "e-Governance". Supply of these services in electronic form could be done at different level of complexity:

Level 1 Information: supply of information about public services.

Level 2 Interaction: downloading of forms from Internet.

Level 3 Bi-directionally interaction: processing of forms, including authentication.

Level 4 Transactions: transmission of information, make decisions and deliveries (including performance of payments by electronic means).

3.6. „Simple Procedures Online for Cross-border Services" – SPOCS

3.6.1. Context

Directive 2006/123/EC[18] regarding the services for internal market, adopted by Parliament and European Council on December 12th, 2006 proposes to establish a general frame for helping the free exertion of establishment of services 'suppliers and of services circulation into European space, with keeping of a high quality of services (article 1)[19].

3.6.2. „Simple Procedures Online for Cross-border Services" – SPOCS

The SPCS project has started in 2009 and has developed until the end of the year 2012. The consortium of this project has been formed from partners from 16 member countries. **From Romania, has been participated at project, starting with 2011, the National Institute of Research-Development in Computer Sciences – ICI Bucuresti.**

SPOCS has developed in different member countries more initiatives of implementation of e-Services by PCU. A successful pilot is the procedure of opening of a business – the case of the travel agency- within this pilot-exercise, Austria has achieved very good results. At the initiative of piloting have allied Greece, Lithuania, Poland and Malt. Thus, by this project implemented into Romania, any Romanian tourism agent will be able to open a branch or even of new business in Austria – for example, but in the same time, any entrepreneur from Austria will be able to do the same in Romania.

3.6.3. A brief history and the current stage of the implementation of SPOCS in Romania

ICI Bucharest has participated actively for development of all technical parts of the project SPOCS which will lead to achieving of its objectives.
Thus, at the beginning of 2012, ICI Bucuresti has requested to SPOCS Consortium the inclusion of Romania among the countries which pilots the infrastructure and services performed within the project.

Basically, the pilot consisted in supply by PCU of registration service for services supply in Romania of any authorized Romanian agent in a country which is member to EU. The pilot has been implemented in collaboration with *Centrul National "Romania Digitala"*

[18] Directive 2006/123/EC of European Parliament and Council from December 12, 2006 regarding services in the internal market, JO L 376, 27.12.2006.
[19] Directive 2006/123/EC of European Parliament and Council from December 12, 2006 regarding services in the internal market, JO L 376, 27.12.2006.

(CNRD) (National Center of "Digital Romania")- currently *Agentia pentru Agenda Digitala a Romaniei (AADR)* (Agency for digital agenda of Romania)- which operates PCU and with Ministry of Regional and Tourism Development (MDRT) which grants authorizations for tourism services supply in Romania.

3.7. "European Simple Electronic Networked Services" - e-SENS

3.7.1. Context

The *e-SENS* develops during 01.04.2013-31.03.2016 and is coordinated by the Ministry of Justice of North Rhine-Westphalia (Germany), and the consortium consists in public institutions from over 16 member states of EU.

The project has at starting basis the outcomes of the five projects LSP. Thus, with *e-SENS* it will be assured a high degree of maturity and improvement of *building blocks* (software solutions into fields as e-Business, e-health, etc.) already performed until present. Also, by *e-SENS* it will be introduced new fields of research, as: *Business life-cycle, Semantics, Processes and Documents, etc.*

The combinations of new technologies, open specifications, innovative architectures and availability of information from public sector will offer benefits to the citizens, using a small number of resources.

Thus, the project has as main objectives:

- Technical alignment with previous LSPs;
- Consolidation and extension of *building block;*
- Development of infrastructure for interoperable public services.

The *e-SENS* represents a necessary step for unblocking of potential of cross-border services and to define specific standards of these services.

3.7.2. The current stage of the implementation of e-SENS in Romania

Romania is represented by ICI Bucuresti within *e-SENS,* and institution is implied in all operation packages with an accent on WP6 package, under package WP6.2 – *e-Documents*- which Romanian specialists coordinate it.

This package of operation assumes creation and development of a more efficient solution for sustainability of the project even after it will be terminated.

3.8. Conclusions

As it results from the above mentioned information, Romania is the active part in these European projects which have as objective the implementation of processes of e-Governance in member countries.

CHAPTER 4. Case study of the stage of the implementation and importance of electronic services on a cross-border level in the European Union and in Romania

Thus, after description of the most important European projects which point the putting into action of the initiatives of *Agendei Digitale pentru Europa,* is described a short history of implementation of electronic governance in Romania. Starting with 2001, once with formation of *Ministerului Comunicatiilor si Tehnologiei – MCSI* (Ministry of Communication and Technology), actually, *Ministerul pentru Societatea Informationala – MCSI* (Ministry for Information Society) and after one year from initiation of adherence negotiation to

EU, Romania has stepped into age of digital revolution by a series of legislative measures, continued and improved until today. After different recommendations of EU (both in pre-adherence and post-adherence period) Romania has improved constantly the *e-Governance* strategy, culminating with entrance in EU and continuing in the same line with alignment to EU member states which are part of the PSL projects teams.

4.1. Study case of the Implementation of e-Governance on National Level

4.1.1. Investigation

The main purpose of present study is performance of a detailed analysis upon degree of implementation of the electronic governance at the level of territory of Romania. Thus, using consecrated methods of research, such as, investigation, case study and structured interview, it was made up a fresco of national digitalization.

4.2.2. Results of the investigation

From statistically point of view, after summarizing of investigation results there can be drawn the following conclusions:

- It was registered an overall of 54 answers;
- 38.9% of respondents were male;
- 61.1% of respondents were female;
- Medium age of respondents was 32.2 years;

The enquiry is made up of six (6) questions which approach the subject of e-Governance in Romania from perspective of citizen. Thus, the questions are focusing on services G2C – Government to Citizen, namely electronic public services.

4.1.3. The structured interview

Form performance of interviews it was chosen a special pattern of people, namely persons with high learning studies and post-university studies which were in key management position of authorities of central and local public administration and are responsible by implementation of e-Governance procedures both locally and nationally.

Thus, it was performed the elaboration of structured interview and its distribution within pointed public institution: "Agentia pentru Agenda Digitala a Romaniei - AADR" – an institution being in subordination of Ministerului pentru Societatea Informationala and responsible with creation and maintenance of PCU, issuing of digital signatures, etc.

4.1.3.1. Results of structured interview

The public managers who responded to structured interview are indeed conscious by the lack of trust of citizens in online payment modalities, reason for which most of them responded "*low*" at question "*How you assess the degree of implementation of electronic services on national level?*". As a result, for the question "*What improvements would you bring for decreasing of "digital divide" in Romania? (Many possible answers)*", the majority responded:

- Public policies of IT awareness in schools, libraries, cultural centers, etc;
- Legislative proposals which would impose the compulsoriness of passing to services of online public administration;

- Public policies of endowments of cultural centers, post offices, etc. with IT equipment.

4.2. Analysis of the Final Report of the European Commission regarding the Study of the Implementation of e-Governance and the Reduction of the Administrative Burden in the European Union (SMART 2012/0061)

4.2.1. The premises of study

The elaboration of this study[20] was provided within *Action plan regarding electronic governance 2011-2015*, a document which affirms, among others, the fact that reduction of the administrative burden (RPA) could be performed thus:

- Integration within authorities/public administrations from member states of electronic governance tools;
- Smart use of information which citizens (natural persons) and entrepreneurs (legal persons) have to offer to public authorities for conclusion of administrative procedures;
- Bringing of the electronic administrative procedures at the level of "everyday" of the ordinary citizen regarding the offering and delivery of *e-Governance* services;
- Application of non-redundancy principle.

4.3. Conclusions of performed study

Basically, the present research has both the multiple initiative of the European Commission for promotion of Unique Digital Market/Digital Agenda, and performed studies within people from Romania, emphasizing the study and performed interviews within national central public administration, responsible by implementation of Directive of Services/Digital Agenda of Romania.

The paper was structured in the "top-down" principle (see image 5.5.), starting from detailed description of electronic services (e-Services) at global level (Chapter I), continuing with description and exemplifying of electronic services at European level (Chapter II, Chapter III) and ending with emphasizing the electronic services on national level, at the level of implementations of actions from Digital Agenda of Romania for 2011-2014 and from level of national digitalization (Chapter IV).

Also, there are taking into account the two performed surveys which analyze the level of implementation of e-Governance in Romania, from perspective of civil society, but also from perspective of public managers responsible with implementation of e-Governance procedures.

CHAPTER 5: Conclusions and future research directions

5.1. Conclusions and future research directions on EU level

5.1.1. "Connecting Europe Facility" - CEF

[20] http://ec.europa.eu/digital-agenda/en/news/final-report-study-eGuvernare-and-reduction-administrative-burden-smart-20120061

"Connecting Europe Facility"-CEF represents the next step in formation of Unique Digital Market of European Union by proposal of European Commission which defined CEF as the one of the most important elements of the Multiannual Financial Frame Program 2014-2020 (known as Horizon2020).

As result, the "Connecting Europe Facility"-DEF Digital mechanism is anchored into European Strategy 2020 for a smart, long increase and favorable for inclusion, which classed the digital infrastructure into forefront of the most important initiative of digital revolution: Digital Agenda for Europe (ADE).

CEF Digital disposes of a budget of 1.14 billion of euro, from which 170 million of euro is granted for wide activities, whilst the 970 millions of euro are destined for digital services infrastructure (ISD), supply of cross-border services into network for citizens, enterprises and public administrations.

Into context of Europe Infrastructure Package[21], the European Commission has suggested for the first time, a series of orientation which contain objectives and priorities for wide networks for digital services infrastructures into field of telecommunications. The above mentioned orientations identify the common interest projects for development of infrastructure of digital services (ISD) and wide spread networks, in order to:

- Improve competitiveness of European economy, especially of small and middle enterprises (IMM);
- Favor the interconnecting and interoperability of national networks;
- Access these networks.

5.1.2. Digital services infrastructures - ISDs

More concretely, when we refer to DSI, we talk about created software modules, performed and improved within LSP projects (SPOCS, STORK, STORK 2.0, PEPPOL, epSOS, e-CODEX and e-SENS) during for about eight years (2009-2016). Basically, these software modules (e-Delivery, e-ID, e-Signature, e-Safe, e-Documents and Semantics) were maturated and improved constantly within e-SENS and thus created especially and visionarry to represent the base (headstones) for CEF.
Practically the overall image of this component of Digital Unique Market is following:

Image 5.2. Overall image of ISDs

The ISDs will help the cross-border and trans-sectorial interaction between European public administrations. This thing, on its turn, will allow the basic services supply for enterprises in different fields, such as electronic identification and public acquisitions, and also the interoperable health services.

[21] https://ec.europa.eu/digital-agenda/en/news/europe-infrastructure-package;

The projects will be centered firmly on implementation of a relative small number of trans-European infrastructures based on technical and organizational solutions and which point the supporting of changes and collaboration with and within public sector from the entire EU.

The wide spread part of the program try to contribute to performance of Digital Agenda objectives, such as connection of all European households on internet of 30 megabits per second up to 2020 and connection/subscribing of at least 50% of households to internet of over 100 megabits per second in the same horizon of time – 2020. Taking into considerations these objectives, CEF has as purpose the easing of an efficient flow of private and public investments in order to stimulate the implementation and modernization of the wide networks.

Regarding the multiannual financial frame (2014-2020), at least 15% from CEF budget will be granted for broadband, and at least o third of projects of broadband which will be supported financially within CEF, will beneficiate of speeds of 100 Mbps.

CEF Telecom is implemented by frame project of multiannual financing, identifying thus priorities and actions which follow to be launched during the year. The financing opportunities within Horizon 2020 for the year of 2014 have been launched and implemented already and the only financing opportunity still available in this moment is the one which refers to ISD s for electronic identification and authentication – e-ID.

The frame project of multiannual financing for the year of 2015 was adopted in the month of November 2014. The activities are implemented either by public announcement for pre-trading acquisitions, either by public announcement for offers. Most of information which is specific for these types of announcements is found within Portal of Participants to Projects financed by European Commission on http://ec.europa.eu/research/participants/portal/desktop/en/home.html.

Some initial components which implement the ISDs have already been developed and could be reused, because this was mainly the purpose of these steps: reusing of created software modules. These are the software modules for the other ISD-s and can be reused by any stakeholder that needs to initiate cross-border digital services. In the same time, to meet users' view, these reusable software modules are available and listed within on-le reusable digital services catalogue, on: https://joinup.ec.europa.eu/community/cef/home.

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D. SCIENTIFIC RESEARCH AND PAPERS

83. BANCIU, D.D.M., *Contribuții privind creșterea calității transportului urban prin utilizarea unui sistem de management al traficului.* Universitatea "Lucian Blaga" from Sibiu, 2011.

84. FLOREA, M., *Contribuții privind evaluarea sistemelor de e-Learning.* Universitatea "Lucian Blaga" from Sibiu, 2011.

E. STUDIED PROJECTS OF RESEARCH

Crt. No.	Project Title	National Project	European Project
1.	*EGEE III - Enabling Grids for e-SciencE*		✓
2.	*EGI-InSPIRE* - Integrated Sustainable Pan-European Infrastructure for Researchers in Europe		✓
3.	*TRANSNEW - Support for Realising New Member and Associated States' Potentials in Transport Research*		✓
4.	*SPOCS – Simple Procedures Online for Cross-border Services*		✓
5.	*e-SENS – European Simple Electronic Networked Services*		✓
6.	*C4E – Cloud for Europe*		✓
7.	*PN09-23 01 10 – Servicii electronice bazate pe infrastructuri de tip Cloud Computing*	✓	
8.	*PS 2143/2015 - e-Guvernare și Interoperabilitate: Propuneri de soluții în implementarea Cadrului European de Interoperabilitate la nivel național – exemple de bune practici în Statele*	✓	

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