Abstract

There are so many different opinions about how to evaluate effectively e-services and how to group them. Many studies on service quality and e-service quality have been conducted, and different scales have already been developed for measuring eservice quality.

This study focuses on a creation of a complete e-service quality model with an empirical study that comprises all the different dimensions required to evaluate the e-service quality from the perspectives of the different stakeholders: citizens, companies and government. The main goal of this e-service quality model is provided a model for a deep and complete assessment of the public e-services offered by the SEPE, Servicio Estatal de Empleo Público. The mission of this organization it's "*to contribute to the development of employment policy, managing the unemployment protection system and ensure the information job market for entering and staying work market of citizenship and human capital improvement companies."* Because of the actual critical situation which is living Spain, the model provided by this project pretends to be an efficient tool for improving the e-services offered by the SEPE and it also helps to identify their weakness and strengths.

The methodology used consists of three big steps. The first one is a profound and complete analysis of the SEPE organization, comprehending all its functions, responsibilities and the role they have in the society. The website and all the services offered through it are also studied. The second part consists of a deep research of some studies done by prestigious universities or organizations with a similar framework and scope. The studies selected were carefully analyzed and compared, only considering the dimensions with some relevance in the public e-services framework. Finally, the model is created using the most important dimensions the different studies emphasized. It is divided for each stakeholder and different parameters are considered for each one according to their preferences.

An initial assessment of the model is done for the citizens' point of view. The results show that the SEPE is a really powerful tool that provides citizens with a large variety of services. The main weakness is the complexity of the website, because with the large amount of information available the user can be lost. The other important aspect to bear in mind is that there is not any possibility to interact on the website with another people who may share common interests as forums, chats or blogs. Users can't asses the website and there are no blogs for suggestions, these issues would be very interesting and could provided the organization with feedback and knowledge about the users preferences

Summary

1. Preface

1.1. Project Origin

The current economic situation in Spain is very worrying, unemployment rate has hit a record over 5.97 million people, and joblessness among young people has topped 55%. The highest rates ever reached since the mid 1970s, follows Spain's prolonged recession and deep spending cuts. The figures from the National Statistics Institute mean Spain's jobless rate is twice the EU average.

Youth unemployment continues to be a cause for concern across the European Union, not just Spain, many young people are working in new growing markets as Asia, Australia and South America because they don't have any chance to work in EU.

In this dramatically context, the Spanish government is trying to grow up the employment using different ways. The most important of them is the State Employment Service (SEPE). It is an Autonomous body associated with the Ministry of Employment and Social Security which comprises some central services, 52 provincial management units, a territorial network of 759 services offices distributed though the 52 provinces and a web space (www.sepe.es).

The scope of this project is to analyze and evaluate the information technologies of the SEPE website and determine if it's a useful and effective way to get a job. Classifying the principal services offered through this website, analyze the effectiveness and indicate what changes would be the best for the organization are the principal objectives of this project.

1.2. Motivation

The flow of information has changed the way we live. Nowadays, in this world of globalization, Information systems play a very important role as to collect data, classify and put into process interpreting the result in order to provide information for further communicating and analyzing. This field is growing fast over the last few years and this growth is expected to remain stable the following years. Humans have been storing, retrieving, manipulating and communicating information since thousands of years before, but completely different a cause of the computers and the internet.

Information technology efforts must be carefully planned for their effects on the organization and its services. With a well thought out IT plan supporting its mission, the outcomes will have an increase impact. So it's very important to have a very useful, effective and capable IT for the organizations targets.

Analyzing the current situation explained above that involves Spain, it would be so useful and interesting analyzing the IT, principally the SEPE website, used by the Government to grow up the employment rate, and determine if it works or if it is useless.

2. Introduction

2.1. Project objectives

The main objective of this project is to create a complete model for evaluating public e-services given by e-government. The methodology used involves two big steps. The first one consists in a deep analysis of the e-government organization studied, the SEPE. Comprehend study, analyze and understand the services provided through each stakeholder involved are required for a complete assessment of the e-services provided by this important Spanish organization. Afterwards, a deep research of studies cases done by relevant universities or prestigious institutions into the framework of e-services or e-government was analyzed. Based in these case studies a complete model for assessment was created in order to evaluate e-services given by SEPE.

The most important objective of this project is not to apply this model into the SEPE institution, it's to provided to this organization a complete model for an useful assessment. However, an initial assessment is done in order to verify the model created. It was not possible to measure all the dimensions that the model contains because of lack information of the SEPE organization. I would be very useful to obtain and evaluate some effectiveness parameters of the model, but the SEPE did not provided this information, so it was not possible to evaluate all the dimensions the model contained.

Other important objective of this project is to compare the SEPE and other websites used for getting a job like Linkedin, Google Plus, Twitter and Facebook and analyze the principal difference between them.

2.2. Project framework

The framework of this project is specifically a creation of a model which evaluates public e-services given by the SEPE. Initially, for the methodology, was pretended to find and compare projects done by other universities with the same specific framework. Through this big amount of information about e-services evaluation it was not possible to find out similar study cases which evaluates institutions alike SEPE. Therefore, the framework was extended to projects which assess e-government services or which evaluates institutions e-services, and only considerate the dimensions that have relevance into the SEPE case study.

3. Framework

3.1. Importance of IT in public administration

In the last decade, the importance of information technology is considered as the fastest and most efficient way for an organization to go towards performance and efficiency. The 21st century was claimed as the digital revolution era and technology has produced the information age.

In the mid 1980`s, technology has played a major role in the development of business in the world caused by the invention of the computer. Almost all business sectors have invested on technology to get into the competition in order to survive. Information systems have been the key step towards efficiency. In the mid 1990`s, the Internet caused the extension market frontiers of the globalization, challenging time and space; therefore, having a deep impact on the way the world conducts economic and business practices.

Nobody can imagine the big consequences that internet has produced nowadays in all the sectors. One of them, the electronic commerce explosion, was produced principally from the internet. The big transformation occurred at first in the private sector but has automatically influenced the public administration. Consequently, many technologies reforms were implied for the governments.

3.2. Public Administration

One of the various definitions which have been offered for public administration is: "the management of public programs" (Robert and Janet Denhardt. *Public Administration: An Action Orientation*). Public administration is "centrally concerned with the organization of government policies and programs as well as the behavior of officials formally responsible for their conduct". Public administrators are public servants working in public departments and agencies, at all levels of government.

Public administration is also one of the main tools through which the relationship between the state, civil society and the private sector is realized. In this relation supporting public administration innovations enables achieving higher development objectives in particular economic advantages, poverty reduction and institutional stability. Establishment of a stable, efficient, transparent, professional and independent public administration must be

considered as an important challenge and a great chance for speeding up the Europeanization process in many countries.

The innovation process should be considered in the sense of e-services introduction and reinventing strategies that examines the current state in providing administrative services to citizens. The innovation process also includes changes in organizational structure and in Information Technology implementation.

The challenge of government in the future will be to expose mechanisms on how to get closer to the public into the decision making process. Governments need to take a leadership role in engaging the public. Security and privacy are vital for the availability and delivery of government services, and is also a very important factor to construct citizen self confidence and trust in online services and transactions.

Having in consideration the process of globalization, countries with advance and efficient public administration are in the best position to face with new challenges and obstacles. As difference, the weak efficiency and develop in public administration deprive the States to undertake essential innovations.

3.3. Role of the Internet in today's world

The internet it's probably the most important fact that made the huge expansion of the information technologies. It has unimagined uses in so many sectors, experts say internet caused the information technology revolution.

The role of internet in today's world concludes two most important advantages brought by it. The first one is giving an ocean of information to anybody, and the second is the faster accessibility to such a volume of information. There is also another important fact, it's that anyone can get this information everywhere at every moment, you need only a mobile phone, a computer, a tablet, whatever electronic device to connect it to the internet.

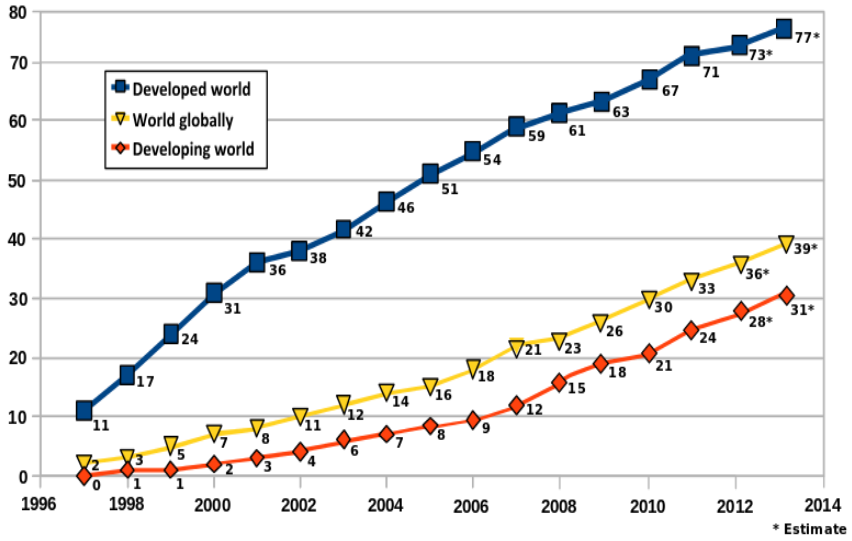
With so big quantity of information and details uploaded on the Internet, people don't need to spend hours of time in library in order to their quest of knowledge. With a single click from a computer system will lead you through the ocean of information of your interest without leaving home. This is tremendously facilitated by using the Internet technology.

The Internet powerfully represents its undeniable importance for almost all the people in the world. Booking air tickets, hotel accommodation, movie tickets, shopping services,

online payment of insurance and loan premiums, electricity bill and recharging mobiles and simply emailing, chatting and watching films online and other online activities of human beings are greatly facilitated by the use of the Internet today.

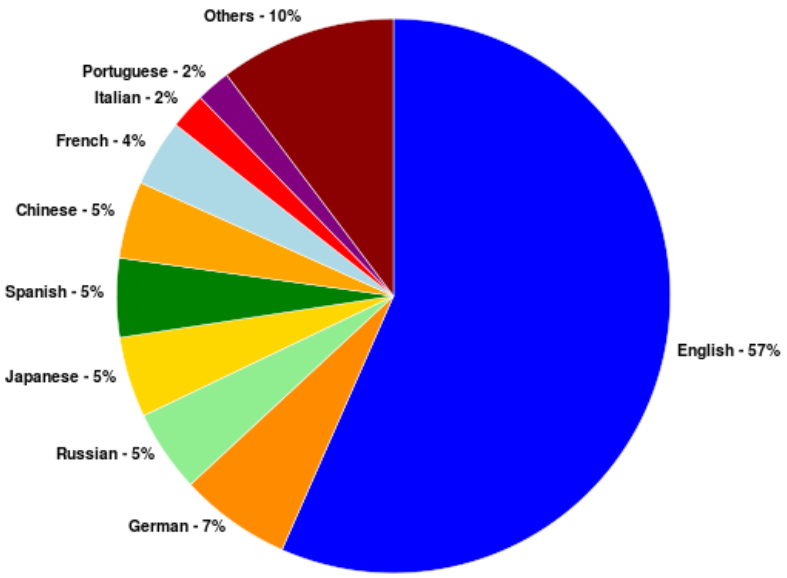
A one day elimination of the Internet from the world will cost million dollars of national and international businesses instantly, let alone sufferings of millions and millions of people in the world without Internet. That is the importance of internet today in people lives. It's with no doubt the most important tool nowadays.

Overall Internet usage has growth tremendously. According to the Market Information and Statistics, International Telecommunications Union, from 2000 to 2009, the number of internet users rose from 394 million to 1.858 billion. By 2010, 22 percent of the world's population had access to computers with 1 billion "google" searches every day, 300 million internet users reading blogs, and 2 billion videos viewed daily on "youtube".



Picture 3.1 Graph of internet users per 100 habitants [1]

The main language for communication on the internet is English. After it, the most requested languages are Chinese (23%), Spanish (8%), Japanese (5%), Portuguese and German (4% each), Arabic, French and Russian (3% each), and Korean (2%). Information provided from Internet World Stats.



Picture 3.2 Pie chart showing the percentage of websites by content language [2]

According to Euromonitor, by 2020 43.7% of the world's population will be users of the Internet. Splitting by country, in 2011 Iceland, Norway and the Netherlands had the highest internet penetration by the number of users, with more than 90% of the population with access.

3.4. E-Government

Public organizations are facilitating and shaping development of infrastructure and services and experimenting new ways of information and services delivery via electronic channels. An e-government strategy is a fundamental aspect in the modernization process of the public sector. It provides a wide variety of information and a form of interaction between public sector organizations, business and citizens.

The term “e-government” refers to the provision of internal administration services to its external environment, which is related with the need for internal transparency. Therefore, these practices must be regarded as tools for creating adding value to products and services, thus increasing efficacy, efficiency, transparency and security. It’s a chance for public organizations to detect and fulfill the needs of their stakeholders more efficiently.

Governments in the entire world are faced to deal with the challenge of transformation and need to reinvent government systems in order to deliver more efficient and effective cost services, information and knowledge through information technologies. It's required to reach higher quality, minimize the costs, offer better government services and get a better relationship between citizens and government. The e-government is raising trough public organizations across the world, specially using internet and web-based network in order to provide services between government agencies and citizens, businesses and employees. It attempts to reach to every person and business anytime, even in remote areas.

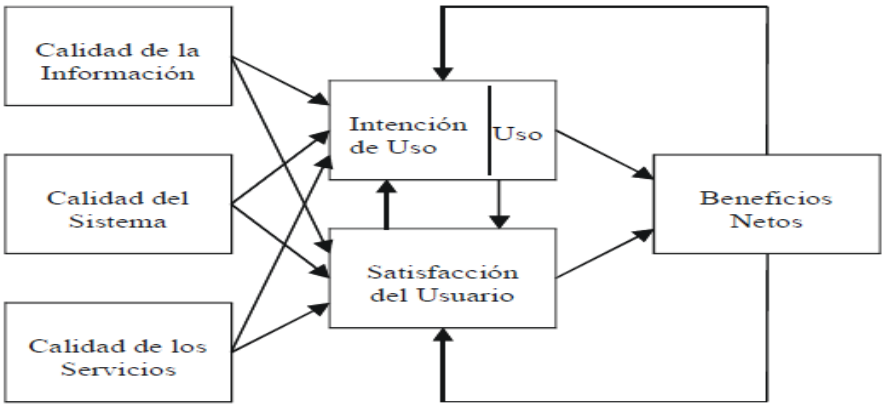
Gartner (Bam and Di Maio, 2000) defines e-government as *"the continuous optimization of service delivery, constituency and governance by transforming internal and external relationships through technology, the internet and media".*

Picture 3.3 Objectives of the different stakeholders about e-Government [3]

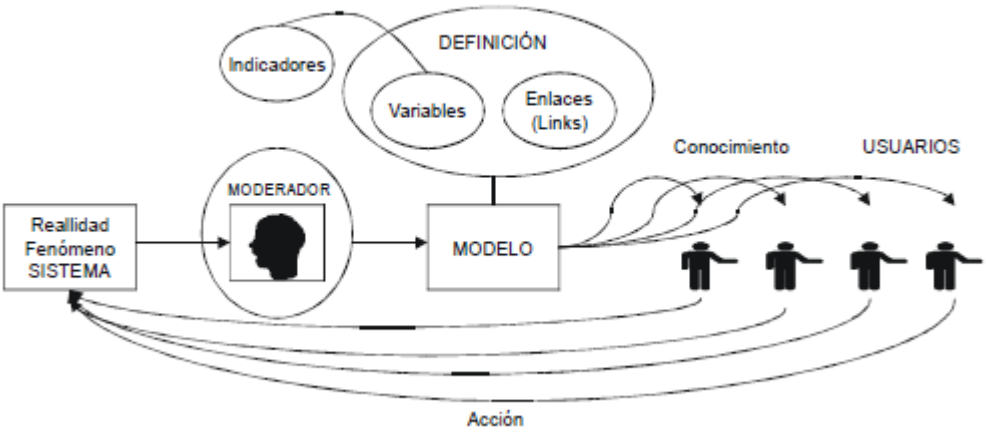
Some benefits of the e-government are:

- Allows businesses to transact with each other more efficiently.
- Aims to make the interaction between government and citizens.
- Government and business enterprises and relationship between them friendlier.
- Saving costs related to the provision of the service, which improves efficiency and effectiveness and produces budget savings as well as image improvement for the public.
- Avoiding the need for personal contact with the administration, because public services can be delivered to citizens without them, at any time and everywhere, and receiving a personalized service as different languages.
- More transparent relationship between the administration and the citizen, information as legislation, timetables or dates can be made public using the web pages.
- Improvement of the image of responsibility, as shown by the privacy and security measures when is need to handle personal or confidential information on-line.

E-government has different business models with advantages and disadvantages with its own features and services that can be offered. In this digital era this model needs to cope with the tremendous and continuous changes in the dynamic technology environment.

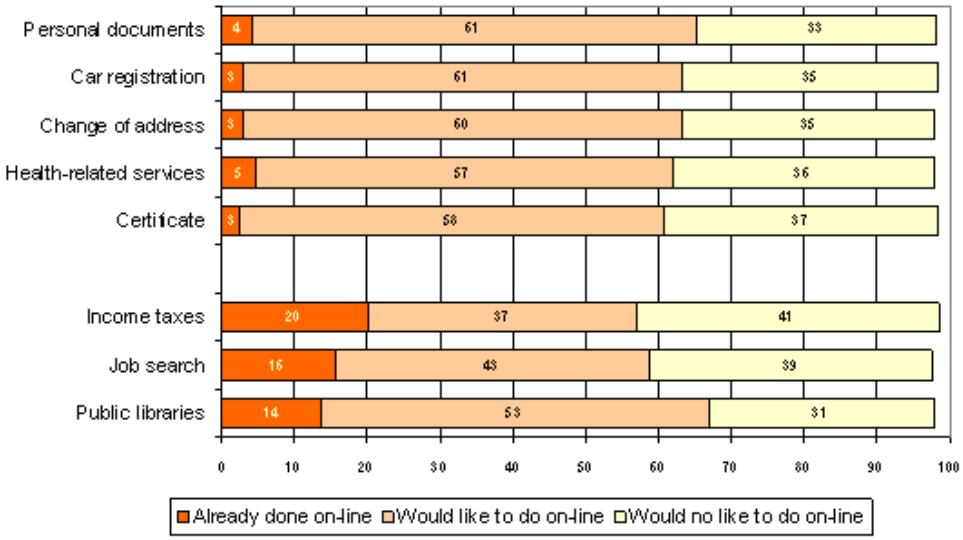


Picture 3.4 Information Technology Success Model by DeLone&McLean [4]

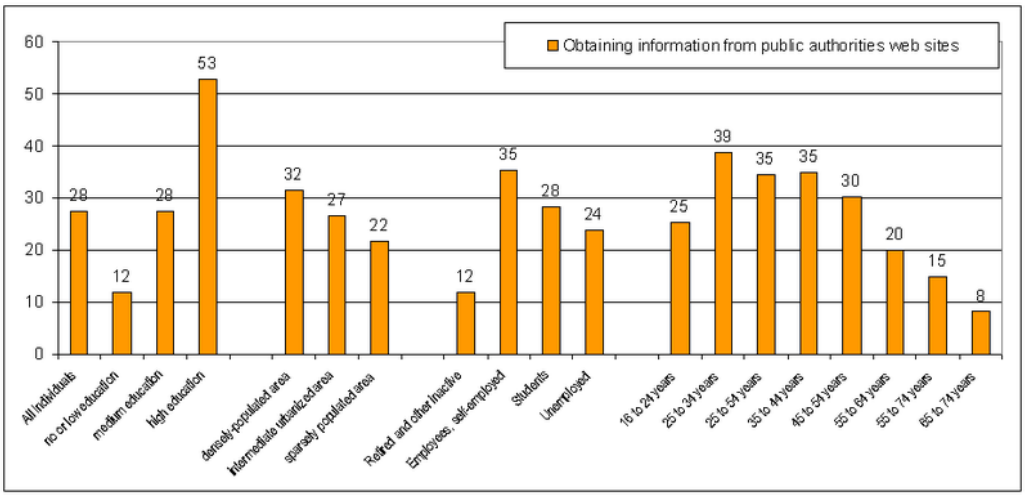


Picture 3.5 System and Model by Roldán an Leal [5]

The critical success factors of e-government are a clear vision and goal with excellent leadership. Government should take measures to incentive public awareness about the benefits of the e-government and its adoption which lead to a successful society, more efficient. High degree of citizen participation and promote excellent telecommunication services make it a real success. Government websites should show citizens that their involvement matters by developing feedback or survey mechanisms and encouraging their use.



Picture 3.6 E-government participation by types of e-government services in EU-27, 2006l [6]



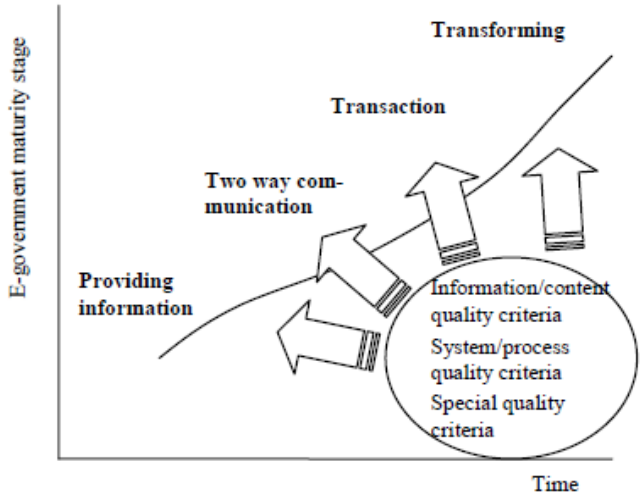
Picture 3.7 Obtaining information online from public authorities by socioeconomic breakdown, 2009 [6]

3.4.1. E-Government evolution

The new Information Technologies can offer public services with different interaction level. At the lowest level, information about the public services is created, later is categorized and distributed through the internet. No two way communication between Administration and citizens exists at first level. This starts implemented at the second level. The second level contains web pages, e-mails and some others that available the citizen not just only receive information but also to contact to public administrations.

The third level includes the possibility to carry out transactions between public administration and citizens and vice versa. Some examples of this level would be the possibility of request local services and applying for licenses.

The fourth level pretend to achieve all the transformation in the way public services are delivered to the citizens, a change starting from the procedures and delivered to the public services.



Picture 3.8 E-government maturity stages and quality criteria [7]

Siau and Long, in 2005, suggested a fifth level called the e-democracy, using tools as the e-vote. Governments try to increase citizen involvement in public life and transparency. This level is facing some implementation problems due because the public perceive lack of security in e-vote systems.

Accenture consultants, in 2006, proposed an evolution of e-government that can be examined in the following table.

The Progress of Public Administrations toward customer service leadership.

	E-government creation	E-government use	Adoption of the four main pillars of customer service leadership	Trust creation
Objective	Number of services available on-line	High percentage of acceptance by citizens and firms	PP.AA services are delivered through various channels and different PP.AA to offer a "single-window" service from beginning to end.	Citizens implicitly trust their PP.AA
Period	Between 1999 and 2001	Between 2001 and 2005	Between 2005 and 2008	From 2007 on
Main challenges	Internet capacity	Dissemination to citizens, acceptance	Collaboration between different PP.AA, service integration	Service content, not only service delivery
Implementation period	Two-to-three years	Two-to-five years	More than five years	More than seven years
Financial repercussions	Cost of technology	Investment in additional channels	Offering more with fewer costs	Citizens' contributions become an inspiration to allocate resources in an intelligent way from the beginning
Service repercussions	Service availability	Service delivery	Service value	Trust in the service
Advantage	PP.AA. master technology	More convenience, Reduction of transaction costs	Approach focusing on the citizen, reduction or stabilisation of delivery costs	The country's effectiveness improves

Picture 3.9 Progress of Public Administrations toward customer service leadership [8]

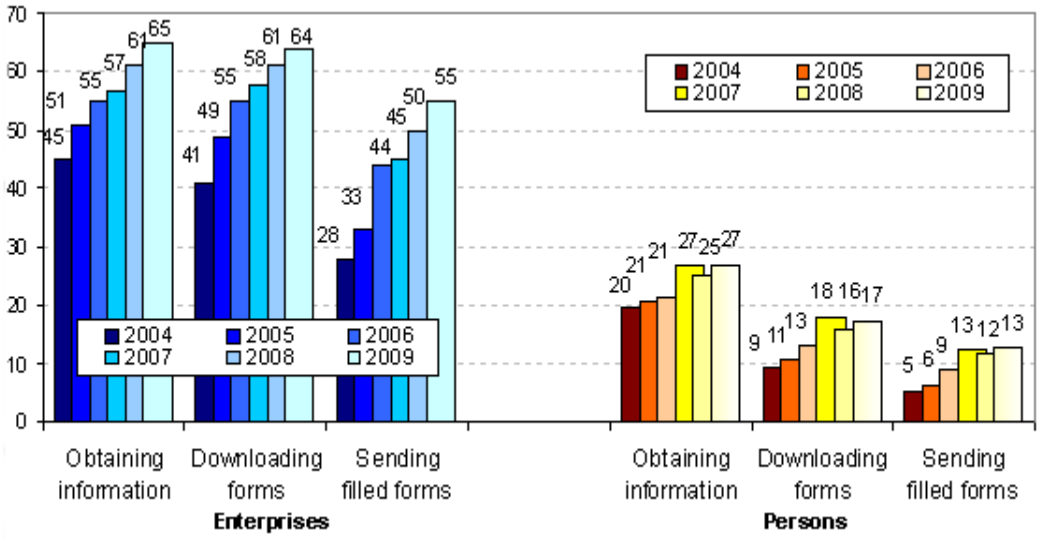
By these analysts the first phase, the e-government creation, consists in translating the Public Administration services into on-line services. In the next phase, corresponding to the use of e-government, the challenge is to achieve a high level of use of on-line services citizens and firms, which requires an important effort by the Administration oriented towards them. The third phase objective is to reach customer service leadership based on four issues:

1. An approach which concentrates on "the customer is always right". That means that all the information is organized around the citizen and not around administration processes.

2. A multi-channel service where the same services can be obtained using different channels as the telephone, a computer, a personal visit to the administration, etc.

3. A fluent multi-department service in which the different public administrations areas would collaborate in order to give the citizen a complete service.

4. Proactive type of communication and education, the citizens are well informed about the services delivered by the public administrations.



Picture 3.10 Online interaction of enterprises during reference year and of individuals during last 3 months with public authorities [6]

3.4.2. Impact of information technology providing efficient services to citizens

During the last ten years, developments in Information Technologies drastically changed the daily life of citizens and their relationship with governments. This revolution, respectively e-government influences the citizen transformation in relation with the administration through improvement of the service delivery and communication.

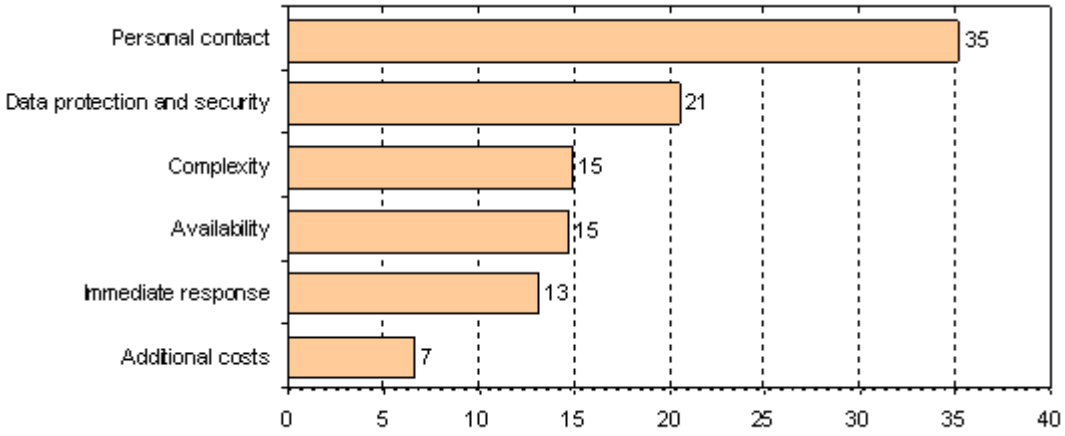
Information Technology is a resource for a renovation of the government that allows drastic transformations toward quality change, and improving services to citizens and public administration effectiveness. It's a very important tool for introducing new organizational progress.

The benefits in efficiency and effectiveness are focused on different fields and simplifying administrative procedures, stranding from modernizing recruitment procedures, improving decision making, combating corruption, enabling trade of information, reducing costs, increasing the control, and further.

Use of Information Technologies can considerably change the way in which services are offered to citizens and businesses, overcoming the obstacles. This use is also associated with new ways and techniques on providing more qualitative and quantitative e-services to citizens. E-services as a modern segment of innovation are considered “24 hours per day electronic delivery of government information”. There are various and different kind of services like e-democracy, e-management, e-commerce, e-justice, e-education, e-healthcare, and further. These tools can contribute to the process of innovation of the governments. It can smooth the progress of communication and coordination of authorities at different levels of government. The aim of these e-services is to encourage people with offered advance and efficient services easier for the users.

The information society represents a challenge to government in order to modernize itself and raises citizen’s expectations.

Nevertheless, many citizens today don’t have positive expectations of the performance of government because they don’t see government as being liable in relation with them. In order to solve that problem, governments should give priority to the strategies that attempts to increase the grounds for an effective and transparent public administration that gets every day closer to the citizens. People should be offered opportunities for efficient, easier and less expensive services.

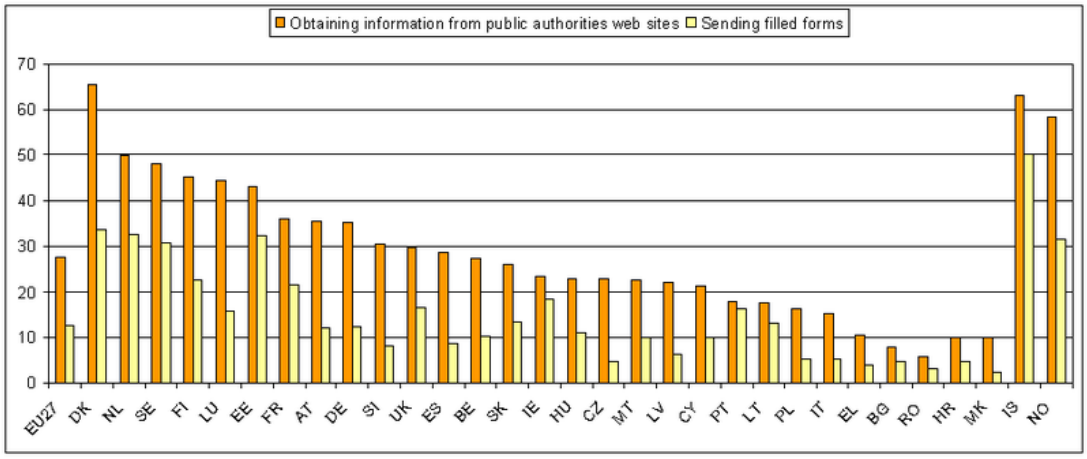


Picture 3.11 Reasons for abstaining from e-government services in EU-27, 2006 [6]

3.4.3. Spanish e-government

The progress of e-government in Spain has been favored not only by the great predisposition shown by the users, also by the legislative efforts made by the Spanish public sector. According to the press office of the Spanish Ministry for public administrations in October 2006, 47.3% of Spanish internet users, over 8.3 million, have contacted public administrations through the net at least once during the last three months. Among all internet users, 49.4% have checked information, 28.4% have downloaded forms, and 14.6% have carried out formalities. The services of the State General Administration about which information is most requested are taxes (47.1%), grants and subsidies (20.6%), social security (16.5%) and public employment (15.5%). It can be seen that on-line Taxes information and services stand among the most often demanded by the citizens.

The picture below shows the interaction of the citizens with the public administrations in 2009. Spain is in the group of countries that invest every year in Information Technologies that's why people are using them more each year.



Picture 3.12 Interaction of the citizens with the public administration by country, 2009 [6]

The efforts made by Spain public sector have materialized in some plans and law proposals. Some examples are the *Avanza* and *Moderniza* plans, set up by the Ministry of Industry, Commerce and Tourism at the end of 2005.

The aim of the *Avanza Plan* is "to achieve convergence with the European countries in our immediate environment that are the most regarding the Information Society". One of

their action lines consists in “Digital Public Services, with measures that make it possible to improve the services delivered by public administrations, improving citizen’s quality of life and firm’s efficiency”.

The Moderniza plan includes a set of measures for the improvement of the administration in the period comprised between 2006 and 2008. The aim of this plan is “giving a fresh impetus to public services, with a more flexible and effective organization, making a strong bet on the introduction and consolidations of Electronic Administration”.

The most important objectives by this Plan are:

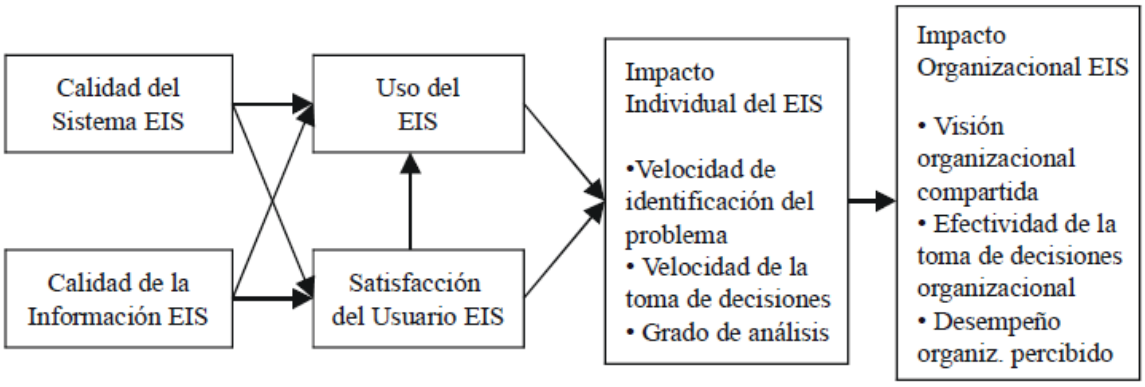
1. Improving relationships with the citizens through transparency, simplification and permanent access.

2. Improving the organizations by quality schemes and internal reforms.

3. Improving the level of employees through the modernization of the recruitment procedure.

Additionally, the introduction of the electronic national identity card, fully implemented in 2010, will make it possible to store a large amount of information about each citizen like health, academic qualifications, driving license, and more others.

This innovations done by the public sector implies an effort to improve public administrations efficiency, but also their effectiveness. In other words, is not only about reducing costs but also about delivering better services to the citizens and using the channels preferred by them.



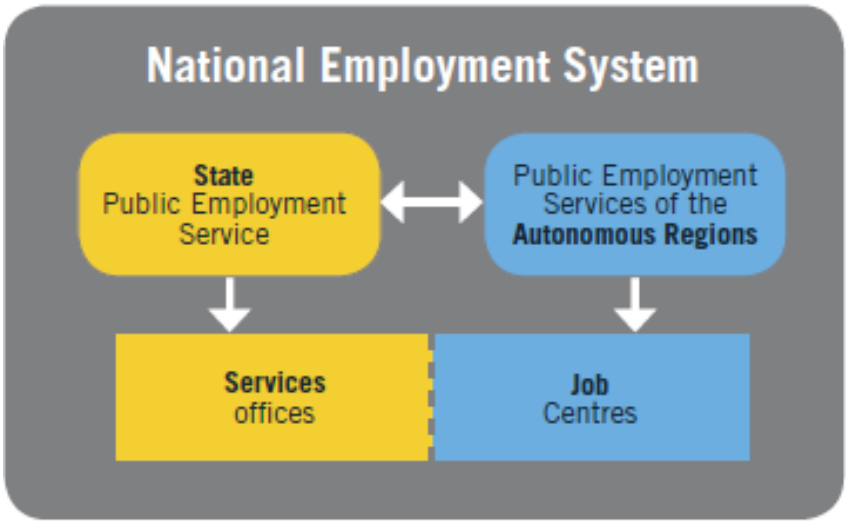
Picture 3.13 Conceptual Model of Executive Information Model in Spain [5]

3.5. SEPE

Headquartered in Madrid, the “Servicio Público de Empleo Estatal” (SEPE) is responsible for implementing government policy on Spain’s unemployment benefit. SEPE has over 10,000 employees at its central office and in regional centers across the country. The department currently administers unemployment benefits to over three million Spanish citizens.

The SEPE is an Autonomous body associated with the Ministry of Employment and Social Security. It comprises:

- Some central services.
- 52 provincial management units.
- A territorial network of 759 services offices distributed through the 52 provinces of the State, from which unemployment benefits are administered by personal attention.
- A web space (www.sepe.es), from which access to benefits, along with diverse information.



Picture 3.14 National Employment System [10]

The SEPE, with the Public Employment Services of the Autonomous Regions, formed the National Employment System. This system has assumed the functions of the former National Employment Institute (INEM) since 2003. This state structure promotes and develops measures and actions for employment, whose undertaking is decentralized, adjusted to the different territorial realities.

The activity carried by SEPE is focused on “the creation development and monitoring of the employment policies”. Within the National Employment System, the SEPE reinforce the coordination between the agents that are acting in the job market.

Their aim functions are:

- Plan and put forward proposals for employment policies focused on the needs of individuals and of companies (professional guidance that means individual and personalized itineraries, job training, employment promotion program, and further.

- Administer the unemployment benefits, making the right of unemployed people to protection effective.

- Carries out research, studies and analysis, of state and provincial scope, about the job market situation and the measures for improving it.

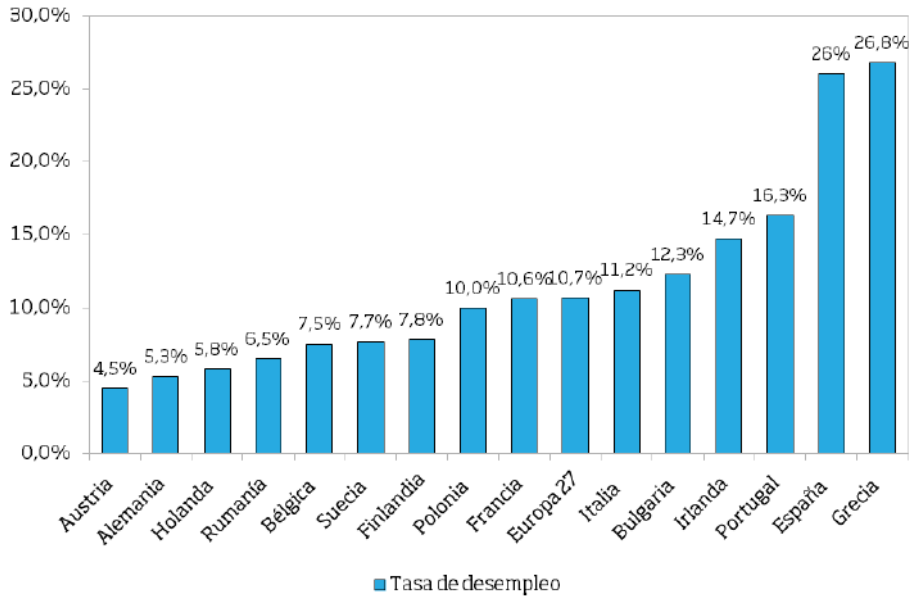
These functions are carried out in order to offer smooth and proactive services, anticipating new needs and being adjusted to these.

The SEPE works on behalf of and for society. The work that is carried out is focused on satisfying and investigating the needs of the citizens. Their stakeholders are:

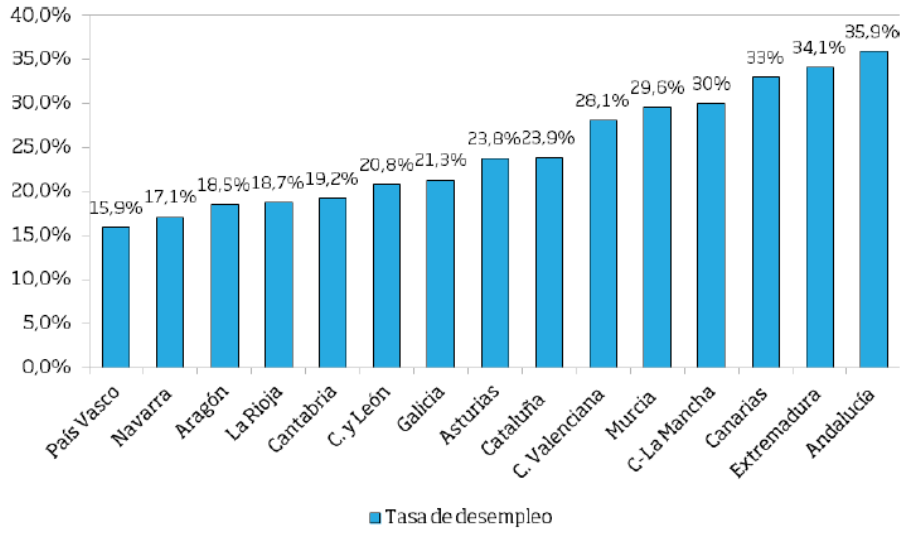
- Individuals who can work, both unemployment and those working.

- Entrepreneurial individuals who have a business idea.

- Companies.



Picture 3.15 Unemployed people by country [6]



Picture 3.16 Unemployed by autonomy fourth quarter of 2012 [6]

3.5.1. Mission, vision and Institution values

The SEPE slogan is: "*We're working for you".*

Mission

Contribute to the development of employment policy, managing the unemployment protection system and ensure the information in the job market for entering and staying work market of citizenship and human capital improvement companies, with the collaboration of the Autonomous Public Employment Services and other workplace agents.

Vision

Achieving excellence in the management of the services given to the public, taking advantage of new technologies, and leading the contribution of the National Employment System to increase the quality of the work market.

Institution values

The values which represent SEPE principles in order for raising the objectives pursued are the following:

- Culture of service to citizens: The SEPE works for society. The public vocation of the people in the organization makes the satisfaction level increases with each satisfied user. All activity of the organization should focus on investigating the needs of their clients and guide the work to satisfy them more effectively.

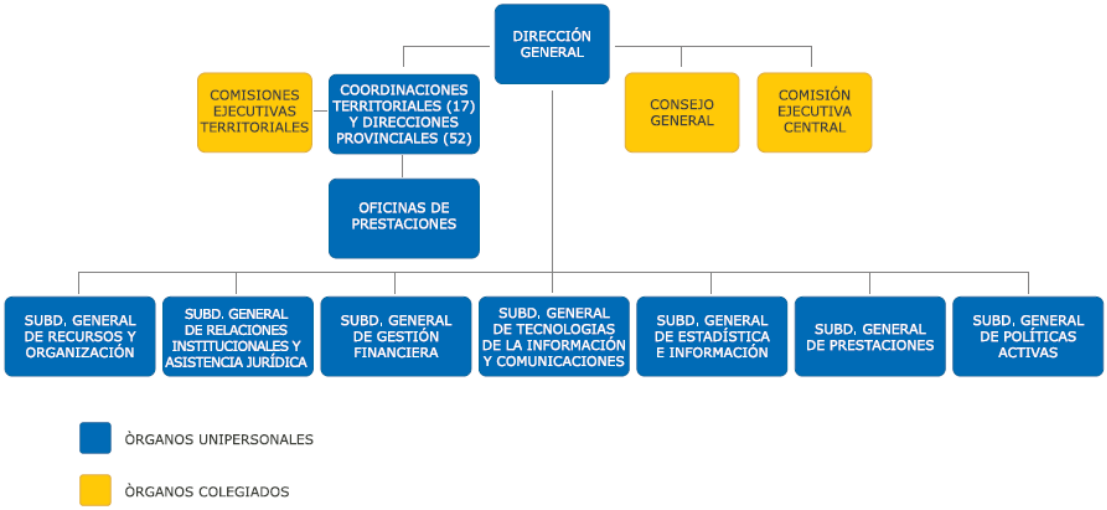
- Innovative capacity: The added value of the SEPE is put by the people who work in it. His role in the work market, which is the principal way to a new reality of work, requires innovation. Thus, the changes that the organization adopts have an automatic reflex on users.

- Transparency: Transparency is translated into a fluid and permanent communication. In this sense, the SEPE remains stable communication channels with their own employees, with the autonomous regions and the rest of agents involved in the labor market.

- Collaboration with other agents: In order to offer the best service to the citizen, the SEPE, given its status as a public service, promote collaboration with other actors in the workplace and improving coordination with other institutions, including at European level.

- Commitment to the staff of the organization: The SEPE has a team with a high level of public service vocation. The good citizen service depends on good human resource management, whose bases are communication, organizational clarity, commitment to the people of the organization and their professional development. The organization must give much value to teamwork, collaboration and improved working conditions.

- Quality management: Quality is achieved by moving the rest of the field values in practice. Servicing is doing this effectively, on time, in a sustainable and responsible, with initiative and continuous improvement. Quality starts detecting the needs of customers and continues in evaluating the quality perceived by them.

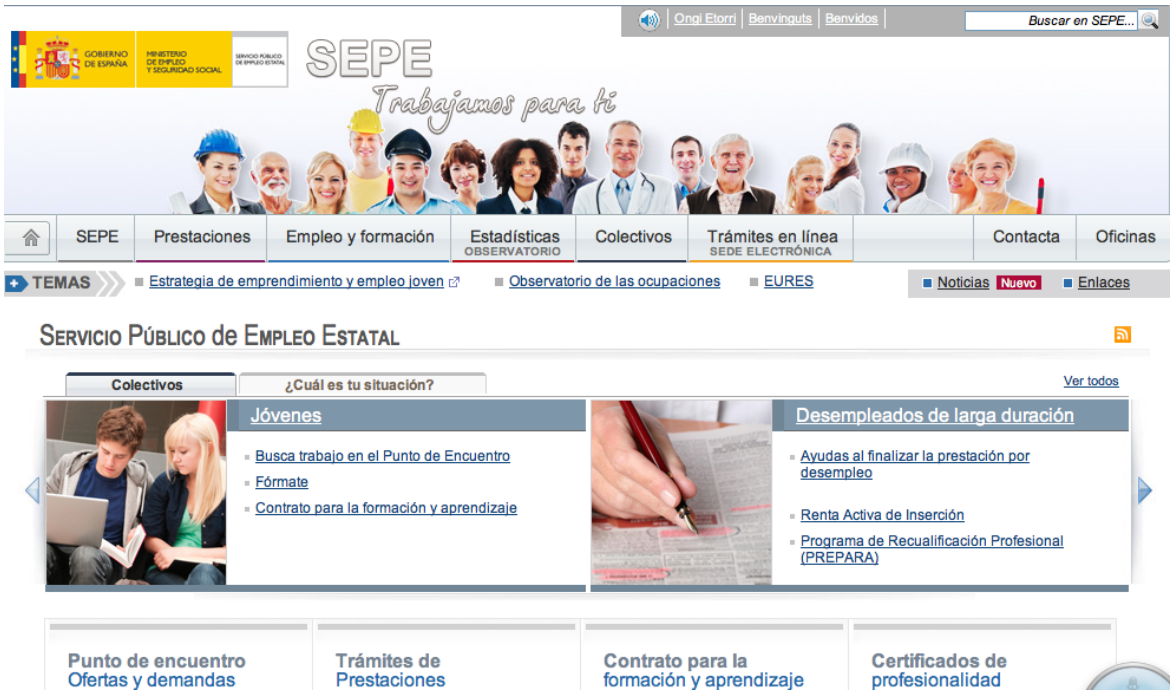


Picture 3.17 Organization chart of the SEPE [6]

3.5.2. Services

In economics, a service is an intangible commodity, more specifically, services are an intangible equivalent of economic goods.

Service provision is usually an economic activity where the buyer doesn't obtain exclusive ownership of the thing purchased. Public services are economic activities that public authorities identify as being of particular importance to citizens and that would not be supplied, or would be supplied in different conditions, if there were no public intervention.



Picture 3.18 SEPE website portal [6]

Services offered by this organization are various. Through the online website you can access personalized information depending on the group that you belong to, the work situation that you find yourself in the topic that interests you. Some of the services given by this website are:

- Process your application for the unemployment benefit and carry out the recognition of the contributory unemployment benefit, obtain information about the position of citizens benefit, download printed forms a and request

a preliminary appointment to attend the office and process it personally. It can also obtain certificates, after the bank details and end the benefit.

- Communicate the contracting of workers, issue company certificates and make use of updated information about contracting modalities.

- Improve your employment opportunities finding out about all of the available Employment Training opportunities.

- Access the Employment Meeting Point, a space where companies can search for professionals and where people can look for jobs.

- Access the main informative reference points about the job market at the provincial and national level, by means of the studies and report prepared by the Occupations Observatory. In addition, it can be consulted the statistic about employment, contracts or unemployment benefits, find out about progress, promoted by the Government of Spain, as regards employment policies and learn more about the SEPE.

Datos económicos

Presupuesto inicial de ingresos para el año 2013 (en miles de euros)

Denominación	Importe
Capítulo 1: Impuestos directos y cotizaciones sociales	19.551.471,82
Capítulo 3: Tasas, precios públicos y otros ingresos	371.205,59
Capítulo 4: Transferencias corrientes	10.978.519,68
Capítulo 5: Ingresos patrimoniales	125,00
Capítulo 6: Enajenación de inversiones reales	901,81
Capítulo 7: Transferencias de capital	13.530,76
Capítulo 8: Activos financieros	794,00
Total general	**30.916.548,66**

Picture 3.19 Initial budget revenues for 2013 (in thousands of Euros) [6]

Denominación	Prestaciones económicas por cese de actividad 224.M	Prestaciones a los desempleados 251.M	Fomento de la inserción y estabilidad laboral 241.A	Transferencias internas 000.X	Total
Capítulo 1: Gastos de personal	-	244.335,04	46.141,55	-	290.476,59
Capítulo 2: Gastos corrientes en bienes y servicios	-	39.884,25	45.450,64	-	85.334,89
Capítulo 3: Gastos financieros	-	79,20	160,56	-	239,76
Capítulo 4: Transferencias corrientes	25.481,10	26.696.000,00	3.671.759,74	132.030,01	30.525.270,85
Capítulo 6: Inversiones reales	-	12.659,47	1.604,41	-	14.263,88
Capítulo 7: Transferencias de capital	-	-	168,69	-	168,69
Capítulo 8: Activos financieros	-	738,00	56,00	-	794,00
Total general	**25.481,10**	**26.993.695,96**	**3.765.341,59**	**132.030,01**	**30.916.548,66**

Picture 3.20 Initial budget rexpenses for 2013 (in thousands of Euros) [6]

3.5.3. SISPE

The SISPE (Information System of Public Employment Services) has its origins in the conclusions of the working group on "Brokerage, computer connections, registry and administrative aspects", constituted by agents of the Central Government and the Administrations of Autonomous Communities, to study the essential aspects of the new model of the Public Employment Service, one progress in the transfer of the process in the management of active policies employment.

To understand the need of the project must be aware of the following aspects:

- Prior to the transfer, the Information System INEM allowed, by itself, to respond the needs and management information required at a country level.
- Under other systems arise transfers Information in the field of some Autonomous Communities

- The rest of the Communities who do not want such systems Information (to manage the system of INEM) require available data resulting from their management over time and way that they want.

This scenario shows that from the moment in which operate several Public Employment Services (SPE) has to integrate and share information relating to the management of active employment policies and unemployment benefits, which is necessary to interconnect their Information Systems. As a result, is developed whose purpose is SISPE integration of information on the management of active policies. They use these different public employment services, ensuring that each of them can perform their own functions.

The law 56/2003 of Employment, assigned to the National System Employment, among other functions, to ensure coordination and cooperation of Public Employment Service and Public Employment Services Autonomy, paying special attention to coordination between active employment policies and unemployment benefits. This initiative has established as one of the instruments of the National Employment System Information System of the Public Employment Services (SISPE).

3.5.3.1. Principal objectives

In a collaborative framework, the Public Employment Service and the Autonomous Public Employment Services have chosen to achieve ambitious objectives, sharing information management policies active employment and unemployment benefits. These objectives are:

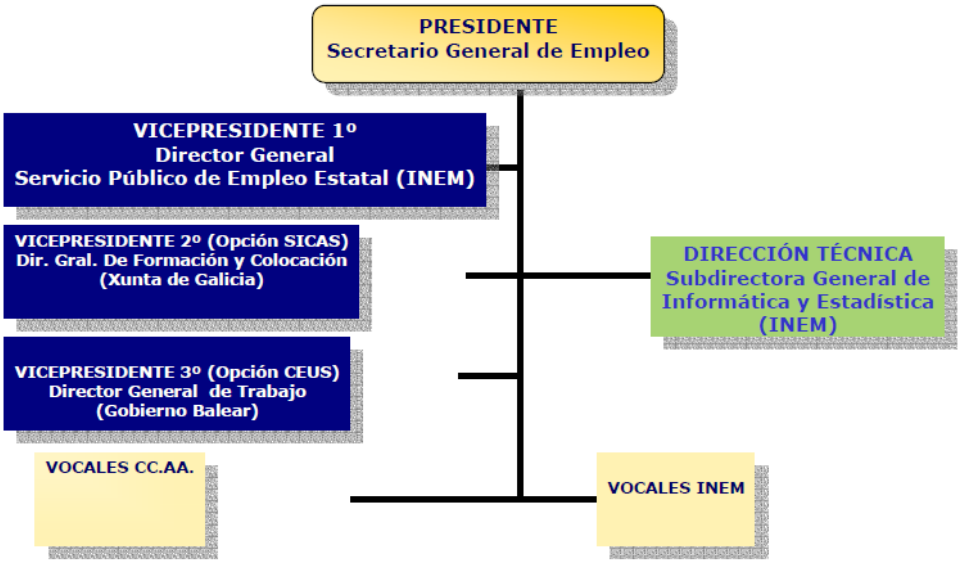
- Ensuring the free movement of workers demanding employment throughout the country enabling geographical mobility.
- Allow the development of national statistics on the indicators that define the evolution and functioning of the labor market, according to the management of all SEPE's offices.
- Provide the National Employment System an overview of the employment trends develop proposals regulations allowing effective on active employment policies.
- To facilitate communication and information sharing, state and autonomic, so as to ensure a level of quality and security for a correct management.

3.5.3.2. Performance

Conceptually the project is based on main aspects:

1. Common data shared by all SEPE's offices, independently of the Autonomous Community in which you have registered, can be accessed and modified from all autonomies. These data defined as "common" are those that will enable the labor mobility of jobseekers throughout developing national statistics and market studies work nationally. The "common" data are updated and validated in accordance with rules established and are kept updated in both the corresponding regional database in which are recorded, as in Base Data shared by all State Public Employment Services.
2. Common management procedures agreed by all Public Employment Services, which guarantee basic management, uniform and coordinated in all the Autonomous Communities.

These pillars are implemented using Technologies Information to enable the coexistence of different Information Systems accessing a database common to all of them. System complexity lies in integrating heterogeneous systems (on the one hand the state system of INEM and on the other various systems Autonomic) so that real-time in the same transaction, performed from any employment office data are updated simultaneously in the state system and the autonomic. The SISPE will serve more than 18 million transactions each month and will provide access to 640 million of records in the database state.



Picture 3.21 Organization and structure of the SISPE project responsibility [6]

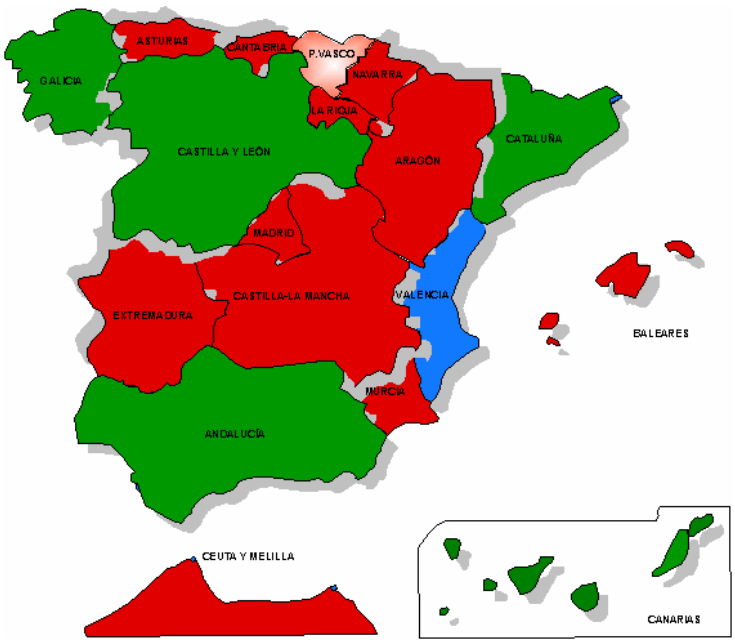
3.5.3.3. Information Systems used by Autonomous Community

For this system have chosen the regions of Aragon, Asturias, Cantabria, Castilla la Mancha, Extremadura, Islas Baleares, La Rioja, Madrid, Murcia, Navarra and País Vasco.

Another type it's the Information System of the Autonomous Community itself. In this Autonomous Communities model, they choose to develop their own system Information to support the management that they are transferred. This system is connected in real time to the state database INEM ensure the integration of information and project objectives. The Autonomous Communities that have chosen this model are Andalucía, Canarias, Castilla León, Cataluña, Galicia, and Valencia.

There are two information systems that respond to this form:

- SICAS: developed for five autonomies: Andalucía, Canarias, Castilla y Leon, Cataluña and Galicia.
- Taurus: developed by C. Valenciana.



Picture 3.22 Information systems used in each autonomy community [6]

3.5.4. Novell Access Manager

To comply with Spanish Information Technologies security laws regarding access to the online resources of public services, the SEPE was required to implement a sign on solution for its online website, “Redtrabaj@”. The SEPE decided to implement Novell Access Manager enabling legal compliance, reducing the administrative work of employees and improving the mobility of benefits claimants.

One of SEPE’s most important responsibilities is the registration of candidates, applying for unemployment benefits. Until 2009 all benefits applications were made in face to face interviews, causing a high administrative load of work for the central department of SEPE and its local departments. This workload was further increased by the each month rising number of Spanish citizens applying for unemployment benefits in the recent crisis situation that involve this country.

In October 2009, SEPE created an online portal called “Redtrabaj@” to automate the unemployment benefits application process. As part of the creation of this portal, SEPE needed to ensure that the portal’s access management processes complied with Spanish IT security legislation introduced in 2007, which requires Spanish citizens to have secure sign on access to the online resources of public services. The portal had over one million users at the end 2010.

Eugenio García, Head of Security and Logistics of SEPE, said: “we had to have absolute faith in the security of the access solution. Furthermore, the diversity of the portal’s potential users was such that access needed to be very straightforward”.

After evaluating several options, SEPE government department, deemed Novell Access Manager to be the most easily adaptable and cost effective option.

“We were attracted to Novell by the guarantees which come with its many years of experience and its status as a multinational company,” said García. “Moreover, we had already successfully worked with Novell products such as SUSE Linux Enterprise Server in the past.”

With Novell Access Manager, applicants for unemployment benefits can now register themselves online to receive their benefits payout. Despite the scale of the project the solution only took nine months to integrate and implement it.

“Implementing Novell Access Manager has guaranteed ‘Redtrabaj@’s’ compliance with the identification and authentication requirements of Spanish IT security laws,” said

García. “Citizens throughout Spain can use the portal with complete confidence that their information is secure.”

“Secure online self-registration has ensured that benefits claimants no longer need to spend three or four hours waiting in line in an office. Unemployed citizens can now complete their applications in the comfort of their own home or use a laptop, internet café or designated portal, thus increasing their mobility and enabling them to use their time more productively to pursue employment opportunities. There is no doubt in my mind that there has been a significant qualitative improvement in the service we deliver since the introduction of “Redtrabaj@”. We have been very satisfied with the contribution Novell Access Manager has made to enable this.”

In addition, SEPE staff is now seeing a significant reduction in their administrative workloads, and are consequently able to work on other important tasks, so the efficiency has improved too. Finally, Novell Access Manager has also improved transparency and usability, facilitating the use of “Redtrabaj@” for claimants who are unaccustomed to dealing with online services. “

Summarizing, the main results achieved by Novell Access Manager were:

1. Enabled compliance with the identification and authentication requirements of Spanish IT security laws.
2. Reduced administrative workload for employees.
3. Eliminated time-consuming face-to-face process of applying for unemployment benefits.

3.6. EURES

EURES (European Employment Services) is an information exchange network operated by the public employment services in the European Union.

The purpose of EURES is to provide information, advice, recruitment and placement (job-matching) services for the benefit of workers and employers as well as any citizen wishing to work abroad. EURES has a human network of more than 850 advisers that are in daily contact with employers and jobseekers across Europe. This big organization plays an important role in providing information about and helping to solve all sorts of problems related to cross border commuting that workers and employers may experience.

Set up in 1993, EURES is a co-operation network between the European Commission and the Public Employment Services of the EEA Member States (The EU countries plus Norway, Iceland and Liechtenstein) and other partner organizations. Switzerland also takes part in EURES cooperation. The joint resources of the EURES member and partner organizations provide a solid basis for the network to offer high quality services for both workers and employers. The countries that formed part of EURES are: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Lithuania, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom.

Its target for 2012-13 is to help some 5 000 people to fill job vacancies throughout the European Union. Activities started in 2012 and involve only a limited number of employment services and job offers.

The first EURES job is based on support from national employment services– information, job search, recruitment, funding – for both young jobseekers and businesses interested in recruiting from outside their home country. Funding is subject to conditions and procedures put in place by these services.

The principal objectives for EURES are:

- Seeks to promote the mobility and equal access to the labour markets of the partner countries in Europe of all those workers wishing to cross borders.
- Wishes to increase the interregional, cross-border and European exchange of job vacancies and job recruitment.
- Aims to increase transparency and the exchange of information on the European labor markets. For this purpose, it provides the partner countries with basic information on living and working conditions in the various countries as well as on issues related to social security.

The main requirements are for Jobseekers who are aged between from 18 to 30, EU nationals and legally living in an EU country. The requirements for the employers are legally established business in an EU country, looking for workers with a specific profile they can't find in their home country and offering minimum 6-month contracts, with pay and conditions compliant with national labour law.

Finally the main services offered by this organization are:

- Informing people about living and working conditions in the various EU/EFTA countries
- Advising on job hunting
- Connecting people to EURES Job Fairs in EU
- Providing information about job postings to EU/EFTA countries
- supporting employers in the recruitment of staff

Some interesting Data from the EURES website (http://ec.europa.eu/eures/):

Job seekers:

Number of registered jobseekers in EURES CV Online: 1.109.936

Companies:

The number of employers in EURES CV Online is the following:

- Companies: 30.638
- Workplaces: 31.301
- Contact persons: 35.233
- Searches made: 5.982.771
- Requests sent: 44.034
- Email notifications sent:

  • For search profiles: 498.956
  • For applications sent: 35.578

3.7. Comparison between SEPE and other employment websites

Spain's unemployment rate soared to a new record of 27.2% people unemployed in the first quarter of 2013, according to official figures. The total number of unemployed people in Spain has now passed the six million people.

This worrying situation is not enhanced by the performance of the SEPE. The core of this organization is to facilitate the Spanish citizens to find a job easier and more efficiently. The lasts statistics of the employment in Spain confirm that the situation in Spain is even worse on the lasts months, and the SEPE is not the efficient tool it was expected to be.

It must be also considered that the SEPE plays an economically and a socially role in Spain that cannot be underestimated. SEPE is responsible for the National Employment System and tasked with issuing unemployment benefits and coordinating employment policies. It is also responsible for various research and publishing activities, including compilation and analysis of the labor market and measures to improve it. SEPE's charge is truly immense. The SEPE website offered many services used by many people like the following:

- Process your application for the unemployment benefit and carry out the recognition of the contributory unemployment benefit, obtain information about the position of citizens benefit, download printed forms a and request a preliminary appointment to attend the office and process it personally.

- Communicate the contracting of workers, issue company certificates and make use of updated information about contracting modalities.

- Improve your employment opportunities finding out about all of the available Employment Training opportunities.

- Access the Employment Meeting Point, a space where companies can search for professionals and where people can look for jobs.

- Access the main informative reference points about the job market at the provincial and national level, by means of the studies and report prepared by the Occupations Observatory. In addition, it can be consulted the statistic about employment, contracts or unemployment benefits, find out about progress.

This organization provided multiple services, yet it's also true the core of this website is to facilitate the approach between companies and citizens and to match them with jobs available, and in this aspect the SEPE is not the most useful way for citizens.

The economic crisis has forced citizens to reinvent itself and has radically changed the way of looking for a job, social networks have become a labor alternative. Even many experts say that social networks must be a seeker for everyone who wants a job. When we talk about social networks like Facebook and Twitter, we associate them to leisure. Yet it's not true. "Social networks are an essential communication tool between companies and candidates. Recently, it is the latter approach companies through these platforms for information about news of their offerings." They conclude from Accenture.

Picture 3.23 Most used websites for looking for jobs in the world [11]

The principal weakness of the SEPE is that this website doesn't allow the citizens to look for jobs abroad and the number of jobs available is scarce. Therefore, because of the lack of jobs available in Spain the unemployed people have not many opportunities through this website, that's why many citizens prefer other ways like Linkedin, Google Plus, Facebook, Twitter (the most used websites tools for looking for jobs), and other very used website in Spain such as Job and Talent. These websites provided people the possibility to have a strong networking and make the companies search the perfect candidate. This is the principal advantage of these portals, you can look for jobs anywhere in the world, and you can establish professional contacts that are in the same situation as you and help each other. The companies find these tools more useful for finding the best candidate, through

the headhunters they can compare and look millions of people all over the world and select the best candidate that suits in the company. The SEPE would need this global view of globalization and make agreements with other countries in order to promote the mobility among their citizens and make Spain an international country.

Others tools used in Spain are Infojobs.com and Infoempleo.com. These websites offered similar services like SEPE but they are more used and more implemented. They offered more possible jobs but they have the same problem as the SEPE, it's only used in Spain. It's not possible to look jobs abroad and because of this grief crisis it's not an efficient tool for obtaining a job according to the studies done. This is why the Big Four social networking websites are growing more and more everyday and they don't have only a leisure role, but also a professional and very useful tool among their users.

4. Model Definition

4.1. Development of e-service quality model measures

The provision of services groups the various processes by which a routine relationship is established between the administration and citizens (including different stakeholders, such as companies and professional associations). The provision of services is, obviously, a central feature of any public administration. However, it acquires a special importance in the area of e-government given that many initiatives are presented basically as projects destined to improve the provision and distribution of public services.

With the increase of the e-services adoption in business and in public e-governments, the importance of measuring and monitoring e-services quality has been recognized. Some academic researchers have already been conducted to develop e-service quality measurement.

There is a growing recognition of different variability in the outcome of the e-service quality studies in terms of the quality dimensions. Recently research on e-service quality shows many different dimensions that can be measured in e-service quality. Previous studies identified several dimensions as criteria of e-service quality. The conceptualization and development of e-services quality measurements is needed because it will help to control and improve the performance of governments and companies. Most studies of the measurement of electronic service have identified the dimensions from either the customer's perspective or the provider's perspective.

Zeithaml, Parasuraman, and Malhotra (2002) detailed five broad sets of criteria as relevant to e-service quality perceptions: information availability and content, ease of use or usability, privacy/security, graphic style and reliability or fulfillment. Santos (2003) in this regard discussed e-service quality dimensions as consisting of, ease of use, web-appearance, linkage, structure and layout, content dimensions; reliability, efficiency, support, communication, security, and incentive as active dimensions. Fassnacht and Koese (2006) said that e-service quality's sub-dimensions of attractiveness selection, information quality, ease-of-use and technical quality are actually reflections of delivery quality. Madu and Madu (2002) proposed the following fifteen dimensions of online service quality based on: performance, features, structure, aesthetics, reliability, storage capacity, serviceability, security and system integrity, trust, responsiveness, product/service differentiation and customization, web store policies, reputation, assurance, and empathy.

Cox and Dale (2001) set up 6 dimensions of online service quality with the comparison of the traditional dimensions of service quality. The six dimensions are website appearance, communication, accessibility, credibility, understanding and availability. Yoo and Donthu's (2001) SITEQUAL believes the e-service quality includes four dimensions such as the accessibility, handling speed of the memorizer, the artistic design and the response rate of interaction. Lociacono et al. (2002) develop an e-service quality scale called WEBQUAL, which is composed of 12 dimensions. They point out that e-service quality includes twelve dimensions including the information adaptability, trust, design, visual requirement, flow, business process, interaction, response time, intuition, creativity, overall communication, and replaceability.

Yang and Jun (2008) measured e-service quality using two groups: Internet purchasers and Internet non-purchasers. They found that reliability was the most important dimension for Internet purchasers even when compared to access, ease of use, personalization, security, and credibility.

Van Riel et al. (2003) described their own e-service quality dimensions. They use design of user interface, reliability, security, customization, and responsiveness as major factors that lead e-service quality. These dimensions reflect the different nature of dealing with a website as opposed to interacting with service employees. Zeithaml (2002) develops a framework consisting of eleven dimensions to be used in evaluating the delivery of e-service quality which include access, ease of navigation, efficiency, flexibility, reliability, personalization, security/privacy, responsiveness, assurance/trust, site aesthetics, and price knowledge.

Wolfinbarger and Gilly (2002) develop an eservice quality scale which was called "eTailQ" with the following four dimensions: website design, reliability, security and customer service. Kim et al (2006) identified nine e-service quality items, being: efficiency, fulfillment, system availability, privacy, responsiveness, compensation, contact, information and graphic style in online retailing. Li and Suomi (2009) proposed eight dimensions of e-service quality, which are: website design, reliability, responsiveness, security, fulfillment, personalization, information and empathy.

Yoo and Donthu (2001) develop a four dimension scale called SITEQUAL to measure online service quality of website, and the four dimensions are ease of use, aesthetic design, processing speed, and interactive responsiveness. These researchers emphasized both system and service attributes in measurement of e-services quality. For example, Zeithaml et al. (2005) developed the "E-SQual" by extending and refining SEVQUAL to measure e-services quality. Lee and Lin (2005) adopted a modified SERVQUAL scale to measure e-service quality in terms of web site design, reliability, responsiveness, trust, and personalization. Wolfinbarger and Gilly (2003) developed a fourteen item scale "eTailQ,"

based on philosophy of total quality management to measure e-services quality and predict customer loyalty, and attitude.

There are some other significant discussions related to e-service quality as well, for example, in the contexts of technology readiness, service experience, customer satisfaction and web site loyalty. Yen in 2005 articulated that the importance of attributes of online customer's satisfaction is dependent on technology readiness. Research on the antecedents to e-service adoption also suggests that e-service experience has impact on customer's perception and evaluation of eservice quality.

Model dimensions	Zeithaml, Parasuraman, and Malhotra (2002)	Santos (2003)	Fassnacht and Koese (2006)	Madu and Madu (2002)	Cox and Dale (2001)	Yang and Jun (2008)	Van Riel et al. (2003)	Zeithaml (2002)	Kim et al (2006)	Li and Suomi (2009)
Information availability and content	x	x	x			x		x	x	x
Ease of use or usability	x	x	x		x	x		x		
Privacy/security	x	x		x		x	x	x	x	x
Graphic style	x									
Reliability or fulfillment	x			x	x	x	x	x	x	x
Website design		x	x		x		x		x	x
Linkage		x								
Structure and layout		x		x						
Efficiency		x						x	x	
Support		x								
Communication		x			x				x	
Technical quality			x							
Performance				x						
Features				x						
Aesthetics				x				x		
Storage capacity				x						
Serviceability				x						
Responsiveness				x			x	x	x	x
Web store policies				x						
Reputation and emphaty				x						x
Personalization						x	x	x		x
Flexibility								x		

Picture 4.1 Dimensions evaluated by service quality models

Model dimensions	(2001) SITEQUAL	(2002) WEBQU	(2002) eTailQ	(1993) SERVQUAL
Accessibility	x			
Handling speed of the memorizer	x			
Artistic design	x	x	x	
Response rate of interaction	x	x		
Adaptability		x		
Visual requirment		x		
Flow		x		
Reliability			x	x
Security			x	
Curstomer service			x	
Business process		x		
Level of interaction		x		
Intuition		x		
Creativity		x		
Replaceability		x		
Tangibles				x
Responsivness				x
Assurance				x
Emphaty				x

Picture 4.2 Dimensions evaluated by service quality models

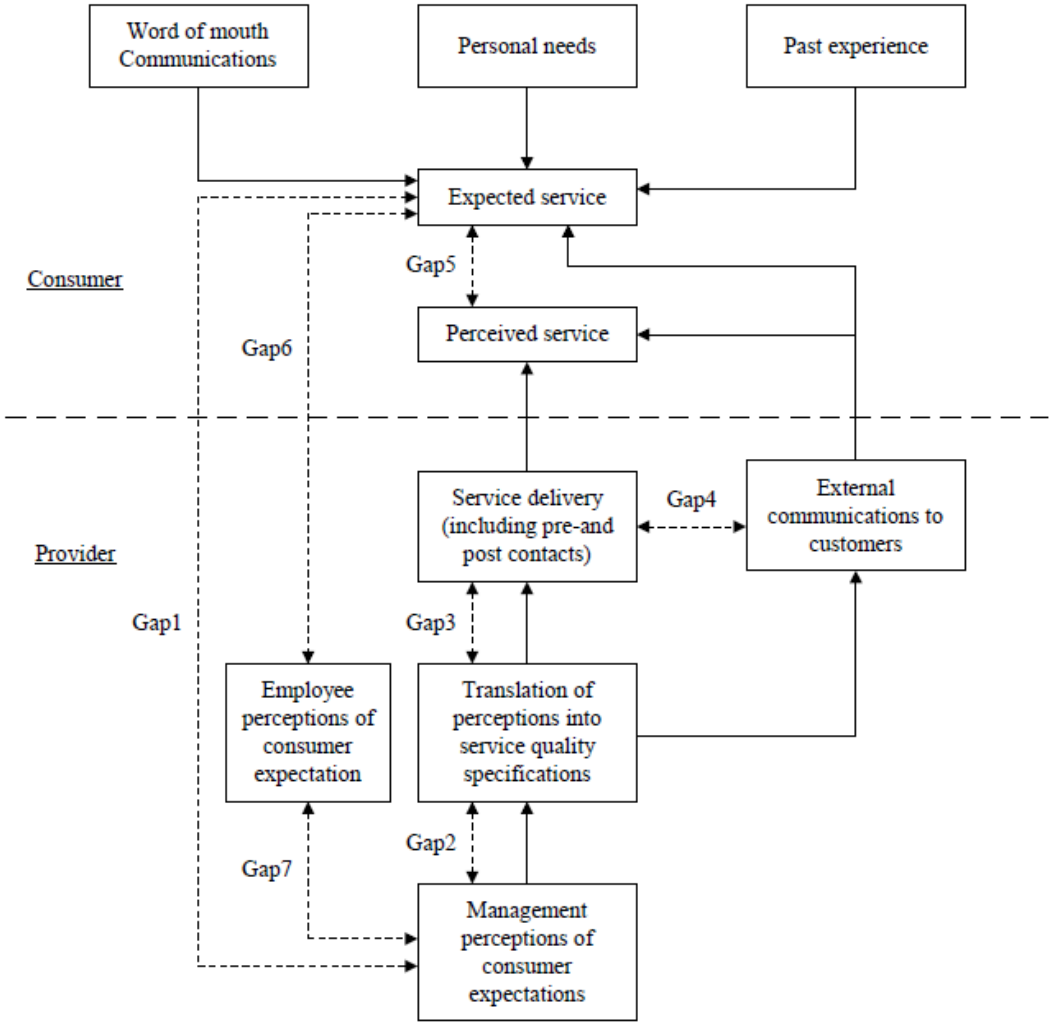
4.2. E-SERVQUAL

SERVQUAL stands for SERVice QUALity. SERVQUAL is the most effective analysis tool available to service industries for studying the difference between customer expectations from service and perceptions of service quality.

For any service industry, it is essential that customer expectations are properly understood, measured from the customer's perspective, and gaps in service quality are identified. SERVQUAL identifies various service quality gaps that may exist in the system of service process. Major attention is paid to gaps associated with external customer services but the model can be extended to other major gaps associated with internal customers

There are seven major gaps in the service quality concept, which are shown in the picture below. The model is an extension of Parasuraman. According to the following

explanation, the three important gaps, which are more associated with the external customers, are Gap1, Gap5 and Gap6; they have a direct relationship with customers.



Picture 4.3 Model of service quality gaps [12]

- **Gap1:** Customer's expectations versus management perceptions: as a result of the lack of a marketing research orientation, inadequate upward communication and too many layers of management.

- **Gap2:** Management perceptions versus service specifications: as a result of inadequate commitment to service quality, a perception of unfeasibility, inadequate task standardization and an absence of goal setting.

- **Gap3:** Service specifications versus service delivery: as a result of role ambiguity and conflict, poor employee-job fit and poor technology-job fit, inappropriate supervisory control systems, lack of perceived control and lack of teamwork.

- **Gap4:** Service delivery versus external communication: as a result of inadequate horizontal communications and propensity to over promise.

- **Gap5:** The discrepancy between customer expectations and their perceptions of the service delivered: as a result of the influences exerted from the customer side and the gaps on the part of the service provider. In this case, customer expectations are influenced by the extent of personal needs, word of mouth recommendation and past service experiences.

- **Gap6:** The discrepancy between customer expectations and employees' perceptions: as a result of the differences in the understanding of customer expectations by front-line service providers.

- **Gap7:** The discrepancy between employee's perceptions and management perceptions: as a result of the differences in the understanding of customer expectations between managers and service providers.

According to Brown and Bond (1995), "the gap model is one of the best received and most heuristically valuable contributions to the services literature". The model identifies seven key discrepancies or gaps relating to managerial perceptions of service quality, and tasks associated with service delivery to customers. The gaps: Gap 1, Gap 2, Gap 3, Gap 4, Gap 6 and Gap 7 are identified as functions of the way in which service is delivered, whereas Gap 5 pertains to the customer and as such is considered to be the true measure of service quality. The Gap on which the SERVQUAL methodology has influence is Gap 5.

4.2.1. Methodology

Clearly, from perspective of the best measurement of service quality in the service sector should take into account customer expectations of service as well as perceptions of service. However, as Robinson (1999) concludes: "It is apparent that there is little consensus of opinion and much disagreement about how to measure service quality".

One service quality measurement model that has been extensively applied is the SERVQUAL model developed by Parasuraman. SERVQUAL as the most often used approach for measuring service quality has been to compare customer's expectations before a service encounter and their perceptions of the actual service delivered. This useful instrument has been the predominant method used to measure consumer's perceptions of service quality. It has five generic dimensions or factors and is classified as follows:

1. Tangibles: physical facilities, equipment and appearance of personnel.

2. Reliability: ability to perform the promised service dependably and accurately.

3. Responsiveness: willingness to help customers and provide prompt service.

4. Assurance: knowledge and courtesy of employees and their ability to inspire trust and confidence. Includes parameters as competence, courtesy, credibility and security.

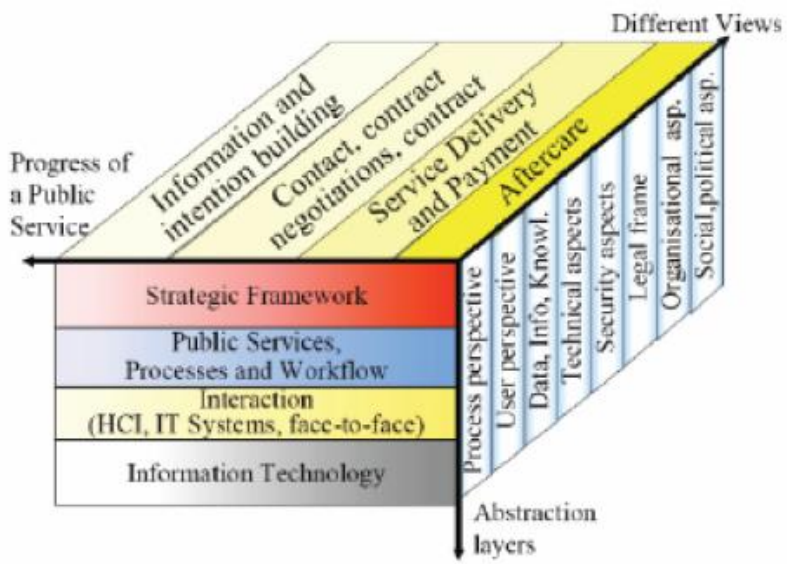
5. Empathy: caring and individualized attention that the firm provides to its customers. Includes access, communication, understanding the customer.

In the SERVQUAL instrument, twenty-two statements measure the performance across these five dimensions, using a "seven point likert scale" measuring both customer expectations and perceptions (Gabbie and O'neill, 1996). It is important to note that without adequate information on both the quality of services expected and perceptions of services received then feedback from customer surveys can be highly misleading from both a policy and an operational perspective. In the following, the application of SERVQUAL approach is more specified with an example in a catering company.

The concept of measuring the difference between expectations and perceptions in the form of the SERVQUAL gap score proved very useful for assessing levels of service quality. Parasuraman argue that, with minor modification, SERVQUAL can be adapted to any service organization. They further argue that information on service quality gaps can help managers diagnose where performance improvement can be enhanced. The largest negative gap, combined with assessment of where expectations are highest, facilitates prioritization of performance improvement.

It is also evident that SERVQUAL by itself will not give a complete picture of needs, expectations and perceptions in a service organization context. As Gaster (1995) comments, "because service provision is complex, it is not simply a matter of meeting expressed needs, but of finding out unexpressed needs, setting priorities, allocating

resources and publicly justifying and accounting for what has been done". Service organizations are responsible and accountable to citizens and communities as well as to customers and service users. There are wider service organization agendas than simply service quality: improving access to existing services; equity and equality of service provision; providing efficient and effective services within political as well as resource constraints. The definition of service quality therefore takes on a wider meaning and accordingly its measurement becomes both more complex and more difficult.



Picture 4.4 Holistic reference framework for e-government develop by Wimmer [13]

4.3. Research of the empirical model

There are so many different opinions about how to evaluate effectively e-services and how to group them. Many studies on service quality and eservice quality have been conducted, and different scales have already been developed for measuring eservice quality. Therefore, a comprehensive framework is needed to identify the dimensions of eservice quality. After combining and synthesizing the existing construct of both service quality and eservice quality, a perceived e-service quality construct is proposed, which consists of the dimensions from the main stakeholders: companies', governments' and citizens' perspectives. Depending on the stakeholder analyzing the factors evaluated would be ones or others.

Area	Aspects
1) Internal quality aspects	a) the level of organizational change – e.g. the extent of innovations brought by back-office integration (e.g. Millard et al., 2004) and the level of service sophistication / extent of one-stop-shop delivery of e-services (Kunstelj and Vintar, 2009) and the level of interoperability
	b) cost-efficiency / effectiveness (see e.g. results of the OECD's e-Government Projects or the UK's methodical help in the field of analyses of the CBA-type as outlined also by Špaček and Malý, 2008)
	c) satisfaction of employees who operate the mechanism of e-service delivery
	d) quality of e-government law and regulations and quality of regulatory impact analysis of such documents
	e) quality of inter-governmental relationships (including the level of top-down / bottom-up directivity
	f) (e-)readiness of public authorities and digital divide in public administration (technical, knowledge, managerial and financial capacities etc.)
	g) interest of political and executive leadership
	h) ...
2) External quality aspects	a) satisfaction of user's with existing services and relevant dimensions of external quality of e-government services' – see e.g. Papadomichelaki and Mentzas (2009), Magoutase and Mentzas (2009) and Wauters and Kerschot et al (2009
	b) (e-)readiness of the society and users, the level of digital divide, determinants of technology acceptance
	c) ...
3) Area of mutual overlapping of 1) and 2)	a) the level of inclusion of external stakeholders in design of services
	b) the level of inclusion of external stakeholders in evaluation of services
	c) stability of networks established for design and management of e-government services
	d) quality of evaluation and integration of existing evaluations and of their results

Picture 4.5 Aspects of e-government management evaluation [13]

There are many studies and articles about Information Technologies applied in different fields as education, health, finance, labour, environment and further. It's very difficult standardize a model which can be used in a wide range of fields, because each one has their particular variables or issues that are more important than another. So this project tries to define a model within the framework of the e-government, more specifically public services.

The next step for the model definition is to study and analyze a group of studies related to e-government evaluation on different fields. On this way, it's possible to analyze and compare the different models and select the best procedures which fit into the public services field.

The indispensable requirements the studies selected meet are the following:

1. E-services or e-governments evaluation.
2. Well distribution and structure of the research method applied.
3. Reliable and trust of the information source (universities with reputation, government or companies).
4. Logical structure and high level of analysis
5. Specific and clear results which show the impact of the information technologies.

It's know that a large group of companies and governments are investing every year huge amounts of money for the development of these information technologies, using them for offer a better service for the citizens and speed up the procedures, nevertheless there is still an important lack of method about how to evaluate them. So some models of different sources are analyzed and determine the key factors of each one, and applied to the public e-services if it's possible for the final model creation.

4.3.1. A comprehensive framework for the assessment of e-Government projects, by Instituto Empresa Business School and School of Business and Administration of Pennsylvania (2008)

This Project done by the "Instituto de Empresa Business School" and the "School of Business Administration", Pennsylvania State University Harrisburg, in 2008, presents an ex-post (after implementation) framework for the assessment of e-government projects.

This study identify that e-Government projects involve a wide range of services, products, people, and procedures and the key to understanding the value of e-Government is to clearly identify the scope of the project. Scope is also necessary to define a unit for assessment.

The scope of e-Government is identified as follows (Heeks, 2001):

- E-Administration: improving government processes by reducing costs, managing performance, making strategic connections within government, and empowering citizens.

- E-citizens and eServices: connecting citizens to government by communicating with citizens, supporting accountability by listening to citizens, supporting democracy, and improving public services.

- E-society: building interactions beyond the boundaries of government by working better with business, developing communities, building government partnerships, and opening up new avenues to strengthen social development.

The e-Government primary stakeholders are:

- Citizens: citizens in contact with public administration, using public services exercising their civil rights, and participating in democratic processes.

- Employees: all categories of pucliv employees, including politicians and various other public administrators.

- Businesses: both for profit and nonprofit companies interact with government. They are in contact with public administration in their compliance with razes, social and legal obligations. Many non profits also seek and submit proposals for government grants.

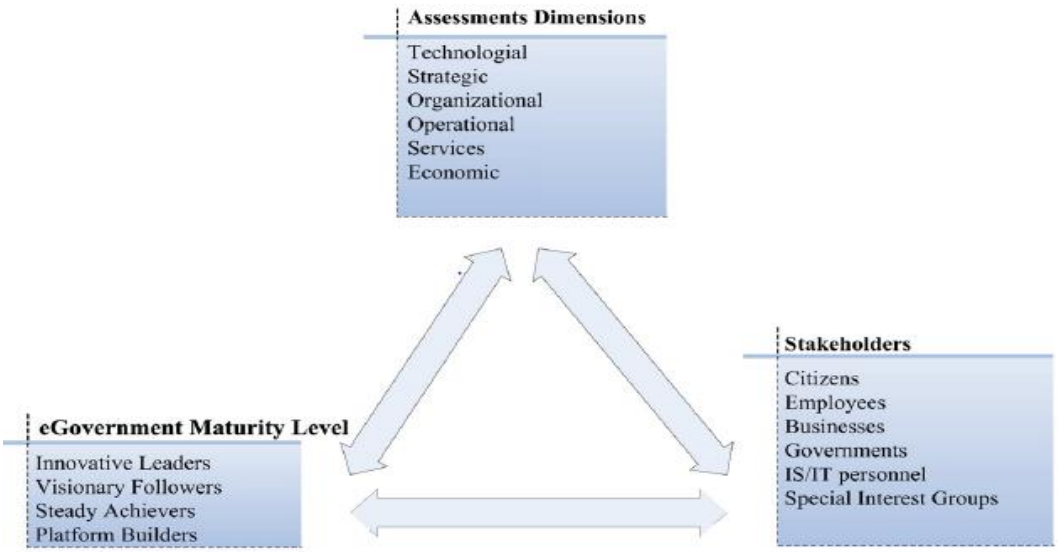
- Governments: there is interaction among local and state levels of government.

- IT personnel: e-government solution suppliers from both the private and the public sector

- Special Interest Groups: a good example of them is the non-government organizations and European Commission.

Identifying the key stakeholders provides a basis for identifying scope of assessment. Each stakeholder group represents a unit of analysis for the assessment framework. A single project will usually be targeted toward a subset of stakeholders. Inclusion of a set of primary e-Government stakeholders provides a platform for comprehensive assessments.

This multidimensional framework for assessment of e-Government projects, which is motivated by the work of Bakry (2004), identifies six dimensions: strategic, technological, organizational, economic, operational, and services. These dimensions are not considered in isolation.



Picture 4.6 E-government assessment framework [14]

The Table below summarizes the different e-Government assessment dimensions and their relevant components.

Table 1
eGovernment assessment dimensions

Dimension	Component
1. Strategic	Objectives
	Risk management
2. Technological	Integration
	Accessibility
3. Organizational	Structure
	Culture
4. Economic	Return on investment
	Cost/benefits
	Sustainability
5. Operational	Functionality
	Efficiency
6. Services	Information services
	Interactive services
	Integrated services

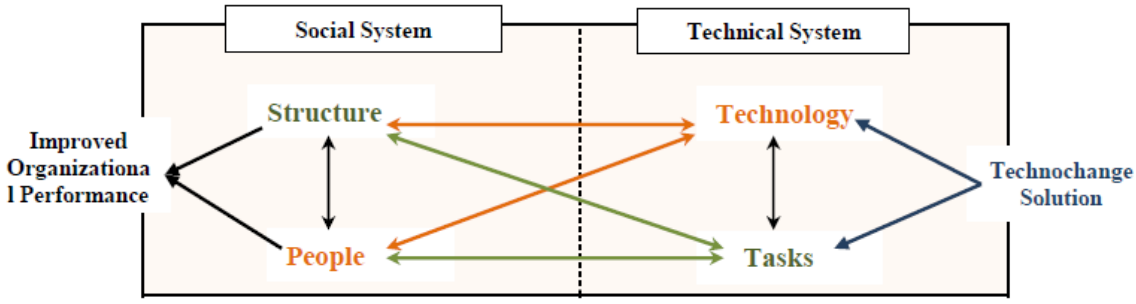
Picture 4.7 E-government assessment dimensions [14]

Concluding, the framework defines and identifies three components for the assessment of e-Government projects: assessment dimension, e-Government maturity level, and stakeholders. The assessment dimensions examined are strategic, technological, organizational, economic, operational, and services.

4.3.2. A multi-dimensional view of Socio-Technical Information Systems Research and Technochange, by Jacksonville University (2011)

The objective of this study, done by Jacksonville University (USA, 2011), is to continue the movement from socio-technical thinking to technochange thinking by analyzing the socio-technical research on information technology projects from different viewpoints. This is accomplished by using a multi-dimensional framework that delivers a fresh research perspective into the information technology, human and organization aspects of techno-change. The results are a socio-technochange conceptual frame for the types of statistical analysis employed, the level of analysis conducted, the logical relationships between the causes and the outcomes, and the impact on the organization.

Effective technochange management requires a different kind of attention to the features of the solution and a different change process from those prescribed by either IT project management or organizational change management. Therefore, it is fundamentally different from both IT projects and organizational change programs. Successful technochange involves careful up front design, a balancing act of the technical and social subsystems and integrated technical and organizational implementation.



Picture 4.8 Technochange solution uses IT to drive Improved Organizational Performance [15]

A group of studies from 2005 to 2010 were selected that were representative of the larger amount of information about this field allowing an exploratory look at socio-technical thinking and the relationship to technochange. Although there are many articles discussing the human and organizational aspects of system development, only relatively few are rigorously conducted case studies or report on actual statistical analysis results that address the requirements of this study.

A socio-technochange framework allows for a treatise of studies to be analyzed from a multi-dimensional viewpoint. The table below shows a spectrum of recently published viewpoints, and illuminates the six dimensions of prior socio-technical research. Some of the results are as would be expected, but others provide insight into the fit between the technical and social subsystems.

Table 2: Multi-Dimensional Analysis of Socio-Technical Research and Technochange

Authors/ Date of Study	Type of Data	Research Method	Causal Agency	Logical Structure	Level of Analysis	Organizational Impact
(Davidson & Chiasson 2005)	Qualitative	Comparative Case Study	Organizational	Process Theories/ TUM concepts as an analytic lens.	Mixed	Mediation was vitally important with these specialized IT artifacts, and that system configuration required changes to software infrastructure and code.
(Luna-Reyes, et al. 2005)	Qualitative	Longitudinal Case Study	Emergent	Process Theories/ Socio-technical approaches	Mixed	Change in professional practice are characterized as an iterative process of sense making among stakeholders
(Kotlarsky & Oshri 2005)	Qualitative	Ethnographic Case Study	Emergent	Process Theories/ Social construction	Micro	Social practice is the primary activity for change and collaboration is one of its characteristics.
(Lee & Xia 2005)	Quantitative	Survey Research	Organizational	Variance Theories/ Socio-technical approaches	Macro	List of changes included 24 types of business changes and 10 types of technology changes.
(Lin & Silva 2005)	Qualitative	Case Study	Emergent	Process Theories/ Technological frames analysis as a theoretical lens.	Micro	Social phenomena such as language, symbolic power, and communication processes are fundamental for understanding how technological interpretations are framed.
(Chae & Poole 2005)	Qualitative	Case Study	Technological	Process Theories/ Structuration & actor-network theory	Mixed	Pre-existing IS may emerge as more active and influential in enterprise system development than in traditional, small-scale IS.
(Hatzakis, et al. 2005)	Qualitative & Quantitative	Case study & Survey Research	Emergent	Process Theories/ Social capital theory	Macro	Conceptualization and operationalization of social capital theory to explain the role of change management initiatives.
(Doherty, et al. 2006)	Qualitative	Case Study	Technological	Process Theories/ Interpretive flexibility	Macro	Human agents shape the technical artifact, and the artifact's shaping potential to humans.
(LeRouge, et al. 2007)	Quantitative	Field Study/ Survey	Organizational	Socio-technical perspective/	Micro	A socio-technical framework for use quality in telemedicine.
(Choi, et al. 2008)	Quantitative	Field Study	Organizational	Socio-technical perspective	Micro	Social enablers are more important than technical support in facilitating knowledge sharing
(Mackrell, et al. 2009)	Qualitative	Interpretative Case Study	Emergent	Innovation-decision model/ socio-technical approach.	Micro	Found that implementation success came from reflexive and resourceful adaptation of technology to meet changing and unanticipated needs.
(Bygstad, et al. 2010)	Qualitative	Longitudinal Case Study	Emergent	Software engineering/ Socio-technical approaches	Mixed	Management challenges have patterns that are context-sensitive.

Picture 4.9 Multi-Dimensional Analysis of Socio-Technical Research and Technochange Performance [15]

In summary, this project concludes that information technology projects often are treated as technical change processes, rather than technology driven social or organizational change processes. While the development of technical systems is an important component of systems development, the achievement of technology adding business value is the principal organizational goal. With this in mind, a coherent review of prior research is provided that includes a discourse on how the human and organizational aspects of systems development projects can be successfully managed to result in effective technochange solutions

4.3.3. E-government evaluation: A framework and case study, by Indian Institute of Technology (2003)

In this case study created by the Indian Institute of Technology (2003), a flexible framework is suggested to choose an appropriate strategy to measure the tangible and intangible benefits of e-government. An Indian case study of New Delhi Municipal Corporation has been taken up for analysis and placement into the framework. The results obtained suggest that to have a proper evaluation of tangible and intangible benefits of e-government, the projects should be in a mature stage with proper information systems in place. All of the e-government projects in India are still in a nascent stage; hence, proper information flow for calculating 'return on e-government' considering tangible and intangible benefits cannot be fully as certained.

Operations Research, Management Science and Applied Systems disciplines have been traditionally offering quantitatively based hard techniques. However, during the 1970's and 1980's, a variety of qualitative, soft and critical methods were developed as the evaluation of transparency and accessibility. There may be difficulties in quantification of them, so they can't be evaluated in a quantitative model.

One important implication of this distinction is that these different types of methods require quite different skills. According to Wolstenholme, no map or model is ever a complete analysis and there is always still a need for further speculation beyond the insights reached by their use. Furthermore, in applying any problem solving method there is a need to create a balance between the need to remain sufficiently quantitative to be applicable and rigorous and sufficiently flexible to be relevant in terms of both audience and method. This allows the possibility of combining methods or techniques together in a particular intervention, a practice known as multimethodology. A combination of hard and soft systems methods would be suitable in addressing problems of evaluating e-government projects:

- Hard measures: Cost benefit analysis, benchmark in e-government.
- Soft measures: scoring method, stages of e-government, sociological angle.
- Hierarchy of measures: 6 levels.

Cost benefits

IT infrastructure in e-government is a long-term investment decision, involving a current outlay followed by a series of benefits over the life of the project. The evaluation of cost benefit can be in a traditional or time adjusted/discounted basis method. The average rate of return (ARR) as the conventional method of appraisal is unsatisfactory to the extent that it is based on accounting profits and ignores the time value of money. The payback method, which shows the recovery period of the original outlays, is superior to ARR method in that it is calculated using cash flows. Nevertheless, it also ignores the time value of money and disregards the total benefits associated with the projects. Still, it is useful as a measure of the liquidity of investments. The discounted cash flow methods in the net present value (NPV) approach satisfies all the attributes of a good measure of appraisal in e-government projects as it considers the total benefits as well as the timings of the benefits. The NPV method has the merit of consistency in assumptions relating to reinvestment of funds released by the projects.

Benchmark in e-government

One form of benchmarking is through metric benchmarking,23 which provides numeric measures of performance, such as:

- Information about given topics exists at the website (1)
- Link to relevant contact (phone number or email address) exists at the website (2)
- Downloadable forms available online on a given topic (3)
- Transaction or other interaction can take place completely online (4)

Grading is done from the perspective of implementation rather tan perpective of “final users”.

Payments			
	Utilities	1	Only information available
	Taxes	3	Downloadable forms available
	Fines	1	Only relevant information available
Registration		0	Nothing is available so far
Permits		0	Nothing is available so far
Customer Service	Action requests (Complaints)	3	Downloadable forms available
	Code enforcement	1	Only information available
Communication about Emergency information		0	Nothing is available so far
Licenses			
	Business	1	
Images		0	Nothing is available so far
Audio/Video		0	Nothing is available so far
Documents			
	Budget report	1	Only information available
Applications			
	Bidder/tender applications	3	Downloadable forms available
E-procurement		0	Nothing is available so far
Miscellaneous			
	Property Assessment History Lookup	1	Only information available
	Total	15	

Picture 4.10 Example of benchmark New Delhi Municipal Corporation [16]

Scoring method

Scoring methodologies are used in many evaluation situations, focusing on key organizational objectives. The scoring methodology is used in this model so the analyst first identifies all the key performance issues and assigns a weight to each of them, and then the weighted average of all the attributes is calculated. The item with the highest score is judged the best service provider in comparison to similar organizations.

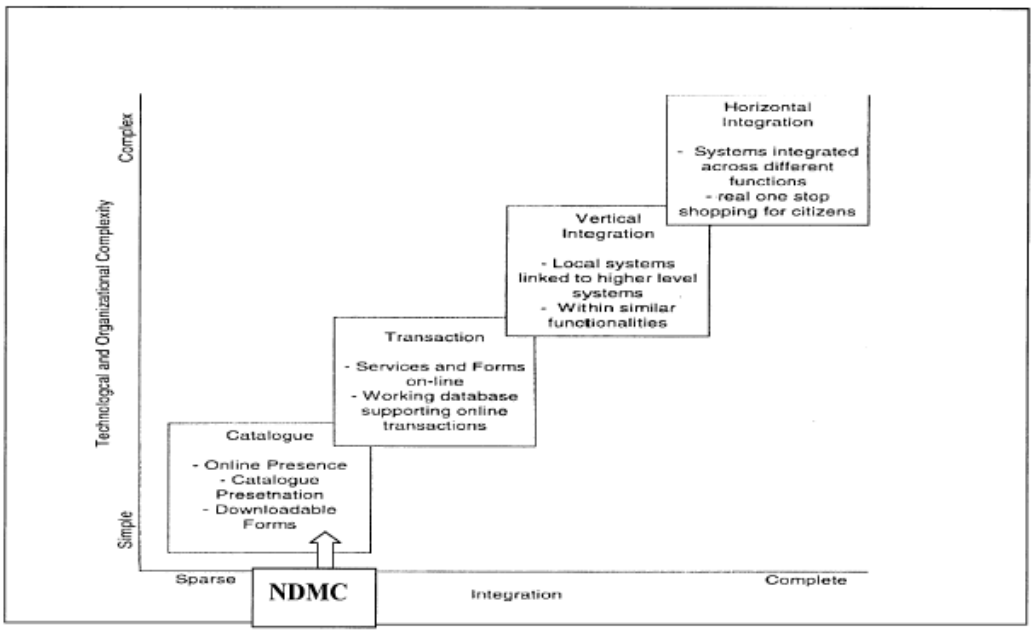
This approach can incorporate both tangible and intangible benefits. If there is a strong connection between a benefit accrued due to investment in IT infrastructure of e-government, it will influence the final score even if it does not have a monetary value. Thus the scoring model helps solve the problem of assessing intangible benefits by linking the evaluation of these benefits to the factors that are most important to organizational performance.

Criteria	Weight	Multiplying factor	Multiplying weight
Ease of use	1.5	8	12.0
Reliability	1.5	7	10.5
Data query and display	1.0	8	8.0
Storage and retrieval	1.0	7	7.0
Documentation	0.5	8	4.0
Expandability	0.5	6	3.0
Reporting	1.0	7	7.0
Speed	1.5	9	13.5
Support	1.0	8	8.0
Pricing	1.5	7	10.5
Total	11		83.5
Overall score			83.5/11 = 7.59

Picture 4.11 Scoring method [16]

Stages of e-government

E-government is found to be an evolutionary phenomenon, and therefore e-government initiatives should be accordingly derived and implemented. In this regard, the four stages of a growth model for e-government are described as: (I) cataloguing, (II) transaction, (III) vertical integration, and (IV) horizontal integration.



Picture 4.11 A four stage model' by Layne & Lee [16]

Sociological angle

Increased transparency due to more automation might not be acceptable to a certain section of the employees who will always resent these initiatives. Moreover, we must not underestimate the apathy involved in the assimilation of new technologies.

An opinion survey would be useful to gauge the responses of employees' adaptability and responsiveness in the new systems. The areas that could be looked into include the bureaucratic hurdles faced in moving toward an alternative delivery arrangement, the level of transparency and accountability of the employees in new collaborative arrangements, and the likely road ahead about the future of e-government. Accordingly, the HR department can be sensitized to make employees knowledgeable about the benefits of e-government, as well as giving them the necessary training.

Hierarchy of measures

IT does not directly produce value. The value is in its impact upon the organization. One of the main areas that are concentrated IT support is at the level of the individual user. It can be very diverse in terms of the amount of use and the ability of the user to take advantage of the type and amount of available computer-based support. This diversity makes assessing the value of IT use very complex. An approach for measuring the "Return on e-government" is the following:

In conclusion there are not concrete available resources for evaluating these types of projects, the framework explained in this study provides a direction about for consideration of the evaluation of e-government projects in the future. This model would be beneficial for evaluating any other country and also comparing its performance with other countries. The selection of hard and soft measures depends on the system profile, the type offered and the profile of the citizen. The qualitative analysis of benefits is quite subjective and will differ from each person, so the framework can be changed and also the qualitative aspects of measurements.

Measurement Hierarchy attributable to "Return on e-government"

Hierarchy in the performance		Change that is measured
Level 1	Return on investment	Rupees/Dollars
Level 2	Total costs and revenues	Rupees/Dollars
Level 3	Improvement in quality of planning and control	Time required to work out plans, Cost of planning, Managerial time required for control, Degree of automation, Forewarning, Cost of control
Level 4	Quality of decisions	Frequency of failures/reversal of decisions, Number of alternatives examined, Time required for decisions, Number of decisions, Availability of decision support systems, Cost of decisions.
Level 5	Value of information	Usefulness (in terms of validity, accuracy, clarity, frequency, sufficiency, timeliness, reliability, relevancy, message content and cost).
Level 6	System characteristics	Number of people required, equipment and facilities, response time, frequency of breakdowns, inputs, outputs, number of forms, number of operations, number of storages, sizes and quality of data bank, size and quality of model bank, flexibility, simplicity, degree of automation, scope of business components that are related by the MIS, user satisfaction, error rates, persistent problem areas, ease of maintenance and modification, unplanned-for impact on company performance, savings, cost, etc.

Picture 4.12 Measurement hierarchy attributable to "return e-government" [16]

4.3.4. Web-site Quality Evaluation Method: a Case Study on Museums, by Engineering School UNLPam (1999)

The project was done by the Engineering School UNLPam, in 1999. The methodology used in this study for the quantitative evaluation and comparison of web sites quality, is called Web-site Quality Evaluation Method. Thecore models and procedures for the evaluation are supported by the Logic Scoring of Preference model and continuous preference logic as mathematical background. The process steps are:

1. Selecting a site or a set of competitive sites to evaluate or compare
2. Specifying goals and the user viewpoint
3. Defining the Web-site quality characteristics and attributes requirement tree

4. Defining criterion function for each attribute, and applying attribute measurement

5. Aggregating elementary preferences to yield the global Web-site quality preference

6. Analyzing, assessing, and comparing partial and global outcomes

In order to illustrate the methodology the case study involves more than ninety components regarding the general visitor view. A wide set of museum quality attributes are defined and categorized grouping them into a requirement tree. The quality attributes used are usability, functionality, reliability, efficiency, portability and maintainbitility. These aspects give the evaluators a conceptual and general description of software quality and provide a baseline for further decomposition that could specify measurable attributes and variables.

The relative importance of characteristics varies depending on the different users and application domains. According to this, three views of quality are defined: visitor, developer, and manager views. The following attributes are designed regarding specifically from the point of view of general visitors, aspects as maintainability and portability will not be necessary to be evaluated. General visitors are mainly interested in the ease of use and communicativeness of the Web site, in its browsing and search mechanisms, in its coherent navigation mechanisms and dependent-domain expected functionality, and also, in the site reliability and efficiency.

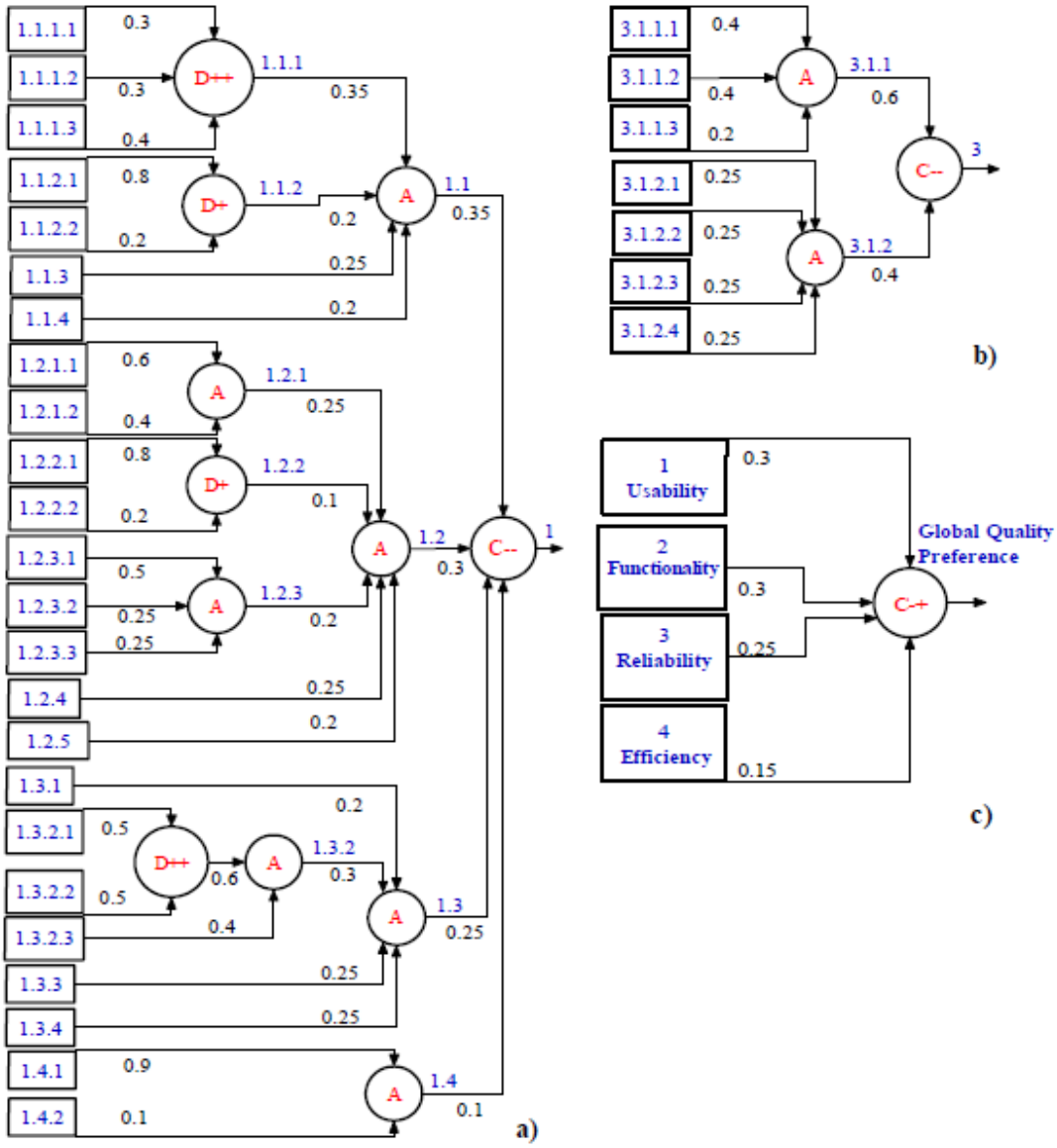
For each attribute a variable can be associated which can take a real value of the elementary criteria function. The final result represents a mapping of the function value into the elementary preference. That preference can be categorized by three rating levels as satisfactory (from 60 to 100), marginal (from 40 to 60) and unsatisfactory (from 0 to 40).

1. Usability
1.1 Global Site Understandability
1.1.1 Global Organization Scheme
1.1.1.1 *Site Map*
1.1.1.2 *Global Index (Subject, Alphabetic)*
1.1.1.3 *Table of Content*
1.1.2 Quality of Labeling System
1.1.2.1 *Textual Labeling*
1.1.2.2 *Iconic Labeling*
1.1.3 *Guided Tours*
1.1.3.1 *Conventional Tour*
1.1.3.2 *Virtual Tour* (*)
1.1.4 *Floor and Room Image Map*
1.2 Feedback and Help Features
1.2.1 Quality of Help Features
1.2.1.1 *Web-site Explanatory Help*
1.2.1.2 *Search Help*
1.2.2 Web-site Last Update Indicator
1.2.2.1 *Global*
1.2.2.2 *Scoped (per sub-site or page)*
1.2.3 Addresses Directory
1.2.3.1 *E-mail Directory*
1.2.3.2 *Phone-Fax Directory*
1.2.3.3 *Post mail Directory*
1.2.4 *FAQ Feature*
1.2.5 *Survey/Questionnaire Feature*
1.3 Interface and Aesthetic Features
1.3.1 *Cohesiveness to Group Main Control Objects*
1.3.2 Presentation Permanence and Stability of Main Controls
1.3.2.1 *Direct Controls Permanence*
1.3.2.2 *Indirect Controls Permanence*
1.3.2.3 *Stability*
1.3.3 *Aesthetic Preference*
1.3.4 *Style Uniformity*
1.4 Miscellaneous Features
1.4.1 *Foreign Language Support*
1.4.2 *Download Feature*
2. Functionality
2.1 Searching Issues
2.1.1 Web-site Search Mechanisms
2.1.1.1 *Scoped Search (Collection sub-site)*
2.1.1.2 *Global Search*
2.2 Navigation (and Browsing) Issues
2.2.1 Local Navigability
2.2.1.1 *Level of Local Interconnection (for a Collection sub-site)*
2.2.1.2 *Orientation*
2.2.1.2.1 *Indicator of Path*
2.2.1.2.2 *Label of Current Position*
2.2.2 Global Navigability
2.2.2.1 *Coupling among Sub-sites*
2.2.3 Navigational Control Objects
2.2.3.1 Presentation Permanence and Stability of Contextual Controls
2.2.3.1.1 *Contextual Controls Permanence*
2.2.3.1.2 *Contextual Controls Stability*
2.2.3.2 Level of Scrolling
2.2.3.2.1 *Vertical Scrolling*
2.2.3.2.2 *Horizontal Scrolling*
2.2.4 Navigational Prediction
2.2.4.1 *Link Title (link with explanatory help)*
2.2.4.2 *Quality of Link Phrase*
2.3 Domain Specific and Miscellaneous Functions
2.3.1 *Content Relevancy (this attribute could be decomposed)*
2.3.2 *Link Relevancy*
2.3.3 Electronic Commerce
2.3.3.1 Purchase Features
2.3.3.1.1 *Shopping Basket Facility*
2.3.3.1.2 *Quality of Product Catalog*
2.3.3.2 *Secure Transaction*
2.3.4 Image Features
2.3.4.1 *Image Size Indicator*
2.3.4.2 *Zooming*
3. Site Reliability
3.1 Nondeficiency
3.1.1 Link Errors
3.1.1.1 *Broken Links*
3.1.1.2 *Invalid Links*
3.1.1.3 *Unimplemented Links*
3.1.2 Miscellaneous Errors or Drawbacks
3.1.2.1 *Number of deficiencies or absent features due to different browsers*
3.1.2.2 *Number of Web-site deficiencies or malfunctions (e.g. non-trapped search errors) or unexpected results independent of browsers*
3.1.2.3 *Number of Dead-end Web Nodes*
3.1.2.4 *Number of Destination Nodes (unexpectedly) under Construction*
4. Efficiency
4.1 Information Accessibility
4.1.1 *Support for Web-site text-only version*
4.1.2 Readability by deactivating Browser Image Feature
4.1.2.1 *Image Title*
4.1.2.2 *Global Readability*
4.2 Performance behavior
4.2.1 *Page Size* (*)

Picture 4.13 Requirement tree regarding the museum domain and the general visitor view [17]

Applying a stepwise aggregation mechanism, the elementary quality preferences can be accordingly structured to allow the computing of partial preferences. In turn, repeating the aggregation process at the end can be obtained the global preference. The global quality preference represents the global degree of satisfaction of all involved requirements. In the museum study, it's used a logical scoring model called LSP model. The strength of LSP resides in the power to model different logical relationships to reflect the stakeholders' needs, namely:

- Simultaneity, when is perceived that two or more input preferences must be present simultaneously.
- Replaceability, when is perceived that two or more attributes can be replaced (there exist alternatives, i.e., a low quality of an input preference can always be compensated by a high quality of some other input).
- Neutrality, when is perceived that two or more input preferences can be grouped independently (neither conjunctive nor disjunctive relationship).
- Symmetric relationships, when is perceived that two or more input preferences affect evaluation in the same logical way (tough maybe with different weights).
- Asymmetric relationships, when mandatory attributes are combined with desirable or optional ones; and when sufficient attributes are combined with desirable or optional ones.



Picture 4.14 Structure of partial and global logic aggregation of preferences using the LSP model. a) Usability b) Reliability characteristics c) global aggregation of preferences for museum study [17]

The final assessment and respective results are shown in the table below.

Table 2 *Detailed results of partial and global quality preferences after computing the corresponding aggregated criteria function for each site museum*

Characteristics and Sub-characteristics	Louvre	Prado	Met.	G.of A.
1. Usability	**59.73**	**57.81**	**45.66**	**70.39**
1.1 Global Site Understandability	48.13	57	44.13	79.03
1.1.1 Global Organization Scheme	0	0	0	98.54
1.1.2 Quality of Labeling System	78.15	80	78.17	97.68
1.2 Feedback and Help Features	58.77	48.77	54	65
1.2.1 Quality of Help Features	36	76	36	100
1.2.2 Web-site Last Update Indicator	97.68	97.68	0	0
1.2.3 Addresses Directory	100	100	100	100
1.3 Interface and Aesthetic Features	70.41	72.53	74.93	90.91
1.3.2 Presentation Permanence and Stability of M. Controls	98.02	78.42	86.42	98.02
1.4 Miscellaneous Features	81	54	0	21.6
2. Functionality	**27.94**	**72.67**	**49.19**	**80.41**
2.1 Searching Issues	0	89.53	0	94.78
2.1.1 Web-site Search Mechanisms	0	89.53	0	94.78
2.2 Navigation (and Browsing) Issues	47.79	62.98	78.88	71.04
2.2.1 Local Navigability	47.97	75	75	75
2.2.1.2 Orientation	15.93	70	70	70
2.2.2 Global Navigability	80	80	80	80
2.2.3 Navigational Control Objects	34	61.6	86.8	52
2.2.3.1 Presentation Permanence and Stability	0	46	88	30
2.2.3.2 Level of Scrolling	85	85	85	85
2.2.4 Navigational Prediction	40	40	75	80
2.3 Domain Specific and Miscellaneous Functions	44.75	71.34	83.39	80.17
2.3.3 Electronic Commerce	0	39.43	93.95	93.95
2.3.3.1 Purchase Features	0	90	90	90
2.3.4 Image Features	60	100	80	60
3. Site Reliability	**89.67**	**82.97**	**53**	**89.67**
3.1 Nondeficiency	89.67	92.97	53	89.67
3.1.1 Link Errors	100	80	40	100
3.1.2 Miscellaneous Errors or Drawbacks	75	87.5	75	75
4. Efficiency	**62.44**	**62.44**	**64.39**	**80**
4.1 Information Accessibility	62.44	62.44	64.39	79.99
4.1.2 Readability by deactivating Browser Image Feature	64	64	66	82
Global Preferences	**51.74**	**68.40**	**50.95**	**79.26**

Picture 4.15 Results of partial and global quality preferences [17]

4.3.5. A framework for evaluating web sites of public authorities, by University of Macedonia (2008)

In this particular study, done by the University of Macedonia (2008), the core is to develop a framework for evaluating the web sites of public authorities. The proposed framework consists of four axes: for assessing the general characteristics and content of the web sites (namely general characteristics and e-content); and two for assessing specific functionalities addressing their governmental character (namely e-services and e-participation).

The proposed framework is gradually built through a critical analysis of the two relevant domains, web site evaluation and e-government. The methodology used in the case study includes the construction of an appropriate questionnaire for assessing the framework metrics. The practical use of the framework is demonstrated by means of a case study, namely evaluating the web sites of Greek public authorities at local and regional level.

For assessing the online sophistication of public authority web sites it's proposed a framework that applies three different levels of detail. The first (higher) level consists of four axes that measure four different aspects of e-government web sites. The second level consists of factors that measure each distinct axis. The third level consists of the specific metrics used to perform the evaluation. Each proposed axis along with its factors and metrics is analyzed in detail as follows.

	Garcia *et al.* (2005)	Smith (2001)	Holzer and Kim (2005)	Henriksson *et al.* (2006)	West (2007)
Content	✓	✓	✓	✓	✓
Navigation	✓	✓	✓	✓	✓
Public outreach	✓	✓	✓	✓	✓
Accessibility	✓	✓	✓	✓	✓
Privacy and security	✓	✓	✓	✓	✓
Online services		✓	✓	✓	✓
Citizen participation			✓	✓	

Picture 4.16 Concept matrix of e-government web site evaluation methods [18]

Most frameworks and methodologies employ some sort of criteria for measuring characteristics related to web site functionality, such as easy access, navigation, interface and privacy, and to web site content. The aspects measured by the model are general characteristics, e-content, e-services and e-participation as can be seen in the picture below.

Axes	Factors	Metrics evaluating
General characteristics	Accessibility	Technical accessibility, accessibility for disabled and non internet savvy users
	Navigation	Searching capabilities, functionality and ease of use features, web page design consistency
	Multilingualism	Number of foreign languages and content completeness in them
	Privacy	Privacy statement, secure connections, information on data usage
	Public outreach	Contact information, response agility
E-content	General content	Information on the organization and local issues
	Specific content	e-Procurement, financial information, job vacancies
	News and updating	Update frequency, local news and electronic calendar
E-services	Services number and level	Breadth and depth of services offered online
	General information	Service provision and functionality in general
E-participation	Information	Online policy documents
	Consultation	Electronic consultations
	Active participation	Communication and decision-making tools, issues proposed by citizens

Picture 4.17 Evaluation framework for public authority web sites [18]

For developing an overall score for each web site a weighting scheme for axes, factors and metrics was employed. For each axis the following weights were selected based on the authors' experience: general characteristics 30 per cent, e-content 20 per cent, e-services 40 per cent, e-participation 10 per cent, and for each factor as follows:

- General characteristics axis: Accessibility 20 per cent, navigation 30 per cent, multilingualism 20 per cent, privacy 10 per cent, and public outreach 20 per cent.
- E-content axis: General content 40 per cent, specific content 30 per cent, news and updating 30 per cent.
- E-services axis: Services number and level 75 per cent and general information 25 per cent.
- E-participation axis: Information 30 per cent, consultation 30 per cent, and active participation 40 per cent.

The results obtained are shown on the following table.

Overall results	Regions	Prefectures	Municipalities	Total
General characteristics	42.62	31.95	33.58	33.69
Accessibility	46.73	28.56	29.74	30.34
Navigation	58.81	41.80	43.16	43.65
Multilingualism	26.15	17.13	29.10	26.49
Privacy	15.38	37.04	27.82	29.10
Public outreach	44.33	32.85	30.42	31.61
e-Content	48.96	48.75	32.14	36.40
General content	62.62	67.66	55.24	58.16
Specific content	27.92	22.80	11.76	14.84
News and updating	51.80	49.50	21.74	28.95
e-Services	10.38	10.89	5.04	6.51
Services number & level	3.85	4.19	1.26	1.99
General information	30.00	31.00	16.38	20.07
e-Participation	5.19	4.94	1.37	2.30
Information	17.31	10.19	0.26	3.15
Consultation	0.00	3.70	0.00	0.76
Active participation	0.00	1.94	3.23	2.81
Total	27.25	24.19	18.66	20.23

Picture 4.18 Overall results for web sites of all government levels [18]

4.3.6. Web site projects evaluation, a case study of Romanian faculties of economics web sites, by University of Romania (2007)

The following study shows an evaluation of web sites created by the University of Romania in 2007. The Web assessment index contains five categories: accessibility, access speed, navigability, content and reliability.

In order to evaluate these web sites, for each category was assigned a weight, established on according to importance degree (from a total of 100 points). Every factor in every category has been rated (from the total of category).

Table 2. Web Assessment Index with the five category and their weights

CATEGORIES	Weights	CATEGORIES	Weights
Accessibility	**10**	**Navigability**	**10**
Presence in search engine	5	Permanent menu	4
Link popularity	5	Site map	3
		Search function	3
Speed	**10**	**Reliability**	**10**
Access speed	10	Link errors	6
		Miscellaneous errors	4
Content	**60**		
Informational level	15	Services level	15
General faculty information	3	Digital library	6
Entrance, educational forms	3	Marks centralization	4
University degree	3	Scholarship	3
Syllabus, timetable	3	Symposium	1
Financial information	3	Magazines	1
Scientific research level	15	Communicational level	15
Conferences, symposiums	6	Address, telephone	4
Journals, magazines	6	E-mail	4
Scholarship	3	Form-based feedback	7
		TOTAL	**100**

Picture 4.19 Web Assessment Index with the five category and their weights [19]

The evaluation of the five web sites was based on an empirical case study. Using the above criteria, we calculated for each factor and each category, the rating and the weight, respectively. The results obtained are the following:

Table 3. Romanian Faculties of Economics Web Sites Assessment Index

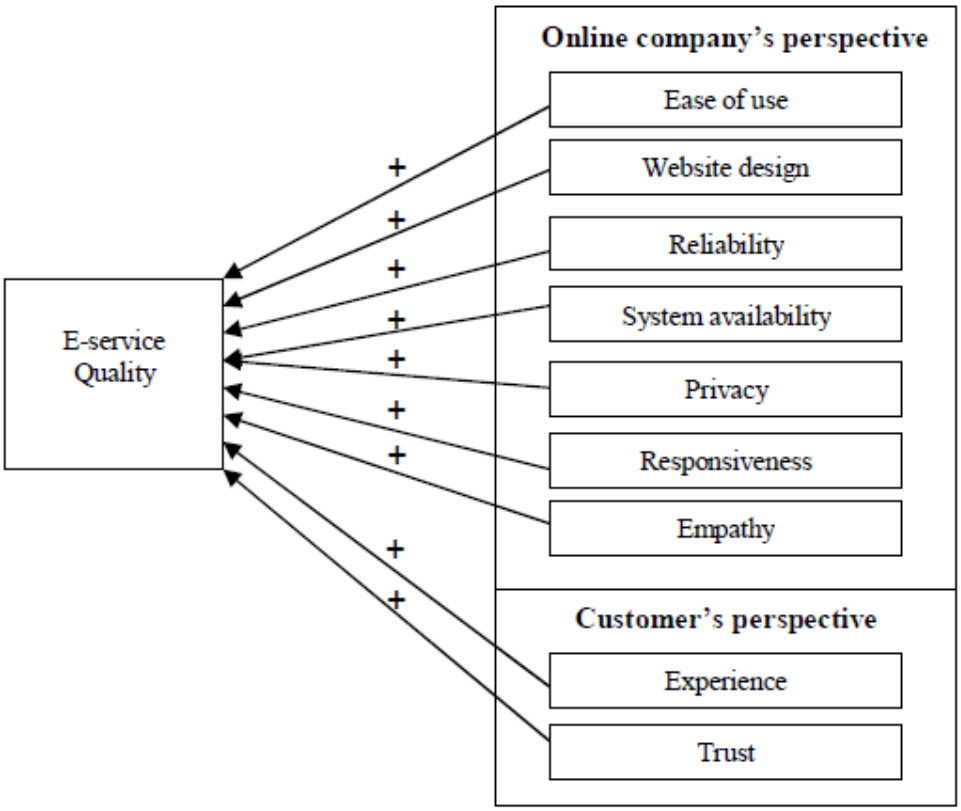
Categories / Universities	Al.I.Cuza Iasi	Babes-Bolyai Cluj-Napoca	West University Timisoara	Ovidius Constanta	Transilvania Brasov
Accessibility	**6**	**10**	**6**	**2**	**6**
Presence in search engines	5	5	5	1	5
Popularity	1	5	1	1	1
Speed	**10**	**10**	**10**	**10**	**10**
Access speed	10	10	10	10	10
Navigability	**10**	**4**	**7**	**7**	**3**
Permanent menu	4	4	4	4	3
Site map	3	0	0	0	0
Search function	3	0	3	3	0
Content	**51**	**36**	**32**	**28**	**32**
Informational level	14	13	9	11	12
Services level	9	6	3	8	7
Scientific level	13	9	12	3	9
Feedback level	15	8	8	6	4
Reliability	**4**	**9**	**1**	**10**	**9**
Link errors	4	5	1	6	6
Miscellaneous errors	0	4	0	4	3
TOTAL	**81**	**69**	**56**	**57**	**60**

Picture 4.20 Romanian faculties of economics web sites assessment index [19]

4.3.7. Measurement of e-service quality: an empirical study on online travel service, by 17th European Conference on Information Systems (2009)

This study, done by the "17th European Conference on Information Systems" (2009), focuses on e-service quality dimensions in the Internet market with an empirical study. The main purpose is to create a scale to evaluate e-services quality from the perspectives of both online companies and customers, which provides fresh insight into the dimensions of e-service quality.

Though many studies on e-service quality have been conducted, and different scales defined, the existing project has created a model with nine dimensions: ease of use, website design, reliability, system availability, privacy, responsiveness and empathy from the perspective of online companies, and experience and trust from the perspective of customers



Picture 4.21 Example of e-service quality model [20]

The definitions of the nine dimensions are illustrated in the following table:

Construct	Definition
Ease of use	Easy for customers to use the website.
Website design	The website interface should be well designed and visually appealing.
Reliability	The consistency of performance and dependability of the website.
System availability	The correct technical function of the website.
Privacy	The safety of the website and the protection of customer information.
Responsiveness	Effective handling of problems and returns via the internet.
Empathy	Care and individualized attention provided to customers via electronic channels.
Experience	The impression about online companies resulting from customers' previous e-service usage behaviour.
Trust	Confidence among customers by providing prompt and information rich service.

Picture 4.22 Definitions of the nine dimensions of the model [20]

The empirical sample of this study was the customers of some online travel companies in China. The customers were asked to indicate the dimensions which influence their evaluation of e-services quality. It is based on their previous experience of online travel service booking. The questionnaire was developed mainly based on a five point Liker scale ranging from strongly disagree (1), to strongly agree (5) was used to measure each item.

4.3.8. Discussing e-government maturity models for developing world, by Royal Institute of Technology in Sweden (2010)

This study done by the university of Sweden said that there are several maturity models being developed to guide and benchmark e-government developments in many countries all over the world. These models describe various stages, three to six, referring to technological complexity. However, it's no seen explicitly that security is addressed as a specific issue at the various stages, nor it's not seen how cultural, legal, economical and managerial security related issues are incorporated. Being part of the ongoing research in the area, the paper attempts to critically investigate, evaluate and analyze eleven existing e-government maturity models.

The process was divided into two phases. Phase one was to conduct a review in the e-government area, e-government development models, and security documentations. The second phase employs a research survey where questionnaires and in-depth interviews were conducted. This phase was later complemented with documentation reviews from the studied settings such as e-government strategies, and ICT security policies.

A list of eleven prestigious maturity models are critically investigated and evaluated. The models studied are titled: Asia Pacific, Chandler and Emmanuel, Deloitte and Touche, Gartner, Hiller and Blanger, Moon, Howard, Layne and Lee, UN and DPEPA, Darral West, and World Bank. The stages of each model are the following:

1. Layne and Lee's four stage model: cataloging, transactional, vertical integration and horizontal integration.

2. Chandler and Emanuel's four stage model: information, integration, transaction and integration.

3. Gartner's four stage model: web presence, interaction, transaction and transformation.

4. United Nation's five stage model: enhanced web presence, interactive web presence, transactional web presence, seamless/ networked web presence.

5. West's four stage model: billboard (information level), partial service delivery, full integrated service delivery and interactive democracy with public outreach and accountability.

6. Hiller and Blanger's five stage model: information dissemination, two way communication, service and financial transaction, vertical and horizontal integration.

7. Moon's five stage model: one way communication, two way communication, transformation, vertical and horizontal integration and political participation.

8. Pacific's six stage model: setting up an email system and internal network, enabling inter-organizational and public access to information, allowing two-way communication, allowing exchange of value, digital democracy and joined-up government.

9. Deloitte and Touche's six stage model: information publishing, official two way transaction, multipurpose portal, portal personalization, clustering of common services and full integration and enterprise transaction.

10. Howard's three stage model: publishing, interacting and transacting.

11. Word Bank's three stage model: publishing, interactivity and completing transaction

Given the criticality of e-government applications in supporting institution core business processes, it is essential that e-government applications be implemented and operated in a secure way. Very few models contemplate the security level as a specific issue yet it is extremely important. The security layers should comprise of specific technical and non-technical security related requirements based on the model's stage requirements. Developing a security layer that integrates technical and non-technical security related issues should be the way forward. The security layer needs to reflect the pertinent requirements of each stage of e-government development model. Thus, as the e-government model stages grow in terms of technological complexity it is important to have security layers at higher stages upgraded to match with the security requirements at that particular stage.

Table 1: Survey results for how important it is deemed that technical and non-technical security requirements are addressed.

Description of technical and Non-technical related issues	**Score ranges from 0 – 100 % , 100% being Fully Agree**				
	W	**X**	**Y**	**Z**	**Average Score**
Technical related security issues					
• Use of strong Access Control mechanisms	80	100	100	100	95
• Encryption of classified critical information	80	60	80	60	70
• Network security mechanism i.e use of Firewalls, IDPS, VPN	80	80	100	100	90
• Backups (BCP and Disaster recovery)	80	80	80	80	80
• Use of anti-virus and malicious codes software's	100	100	100	100	100
Non-technical related security issues					
• Managerial and operational	80	80	80	100	85
• Economical	80	80	100	80	85
• Legal and Regulatory	80	80	60	80	60.75
• Cultural and ethical	60	80	60	60	65
• Citizens/public trust	80	80	80	100	85
• Awareness	100	100	100	100	100

Picture 4.23 Results for how important it is deemed technical and non-technical security requirements [21]

4.3.9. The effectiveness of regional active labour market policies to fight against unemployment: an analysis for Catalonia, by University of Barcelona (2009)

The aim of this work done by the University of Barcelona is to assess the effectiveness of active labour market policies carried out by the Catalan Public Employment Services (SOC) during the year 2005. The SOC is responsible for virtually all active labour policies in Catalonia. Specifically, it undertakes three main lines of action training, providing incentives and job advice, and it is organized in five main areas: equal opportunities, job information and guidance, professional qualifications, work and five training and job creation schemes.

This study case is not focus on a creation of a model which evaluates the different e-services of the SOC website. However, there is an important aspect of this project which is how to evaluate the effectiveness of labour website. The parameters this particular project use are very useful and give a deep analysis of websites focused on help citizens finding jobs. It gives an idea about the way of assess the effectiveness of the services given through similar websites.

Table 1. Number of participants in SOC's actions during 2005

Area	Program	Participants	
A Equal opportunities	Integrated actions	2,500	1.6%
B Job information and guidance	Personalized employment support	21,399	13.5%
C Professional qualification	Job training for unemployed	42,768	27.0%
	Social guarantee programs	1,910	1.2%
	Retraining	2,625	1.7%
D Work and training	*Casas de oficio*	1,534	1.0%
	Escuelas taller	1,690	1.1%
E Job creation schemes	Regional employment pacts	77,166	48.7%
	Public employment plans	6,823	4.3%
Total		158,415	100.0%

Picture 4.24 Number of participants in SOC's actions (2005) [22]

Table 7. Main combination of 2005 SOC's selected actions

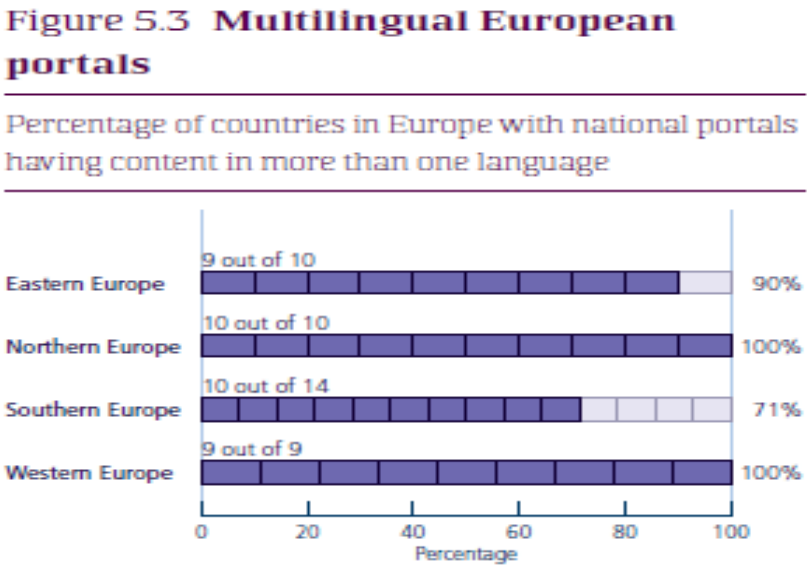
Program 1	Program 2	Participants
Job training for unemployed	Personalized employment support programs	2399
Job training for unemployed	Public employment plans	194
Integrated actions	Job training for unemployed	172
Integrated actions	Personalized employment support programs	161
Personalized employment support programs	Public employment plans	157
Personalized employment support programs	Social guarantee programs	99
Job training for unemployed	Social guarantee programs	80

Picture 4.25 Main combination of 2005 SOC's selected actions [22]

4.3.10. E-Government survey 2012, by United Nations (2012)

This deep and very extend project is about e-government is created by the United Nations in 2012. This projects contains a lot of information that it's not in the specific framework of public e-services assessment, but there is one important factor that really well suits in the delimited framework. It is related with the dimension called e-Participation or e-Inclusion in a multilingualism way. People with little education are very vulnerable to only speak one language, and it's well know that the most websites nowadays are in English, yet no everybody speak English as their native language.

This article shows that language it's the highest obstacle for e-Participation, so websites should be available many foreign languages. Today, an approximately amount of 90% of European websites are available in more than one language. Thus, it is a very important aspect to consider in an assessment.



Picture 4.26 Multilingual European websites [23]

4.3.11. Userfocus, usability consulting and usability training company

Userfocus is a usability consulting and usability training company. Using evidence-based design, they help clients like RBS, Orange and Yahoo create technology that is simple and enjoyable to use.

David Travis set up Userfocus in 1999 because he was frustrated by poor usability in software, web sites and handheld gadgets. He thought that rather than make people adapt to technology, he reasoned to make technology adapt to people. It turned out that this also made business sense: organizations that followed his advice increased usage and sales and had more loyal customers.

The home page is an organization's face to the world and the point at which users decide to interact with an organization. It needs to strike a balance between showing the range of items on offer and simplifying the content to ensure that the majority of customers can easily embark on the most common tasks.

They provided many parameters for a correct usability measure, the guidelines and some examples of parameters they use to assess websites portals are the following:

- Home page usability

1. The items on the home page are clearly focused on users' key tasks ("featuritis" has been avoided).
2. Product categories are provided and clearly visible on the homepage.
3. Useful content is presented on the home page or within one click of the home page.

- Task orientation
  1. The site is free from irrelevant, unnecessary and distracting information.
  2. Excessive use of scripts, applets, movies, audio files, graphics and images has been avoided.
  3. The site avoids unnecessary registration.
- Navigation and IA
  1. There is a convenient and obvious way to move between related pages and sections and it is easy to return to the home page.
  2. The information that users are most likely to need is easy to navigate to from most pages.
  3. Navigation choices are ordered in the most logical or task-oriented manner.
- Forms and data entry
  1. Field labels on forms clearly explain what entries are desired.
  2. Text boxes on forms are the right length for the expected answer.
  3. There is a clear distinction between "required" and "optional" fields on forms.
- Trust and credibility
  1. The content is up-to-date, authoritative and trustworthy.
  2. The company comprises acknowledged experts
  3. Delivery costs are highlighted at the very beginning of checkout.
- Writing and content quality
  1. The site has compelling and unique content.
  2. Text is concise, with no needless instructions or welcome notes.
  3. Pages use bulleted and numbered lists in preference to narrative text.
- Page layout and visual design
  1. The screen density is appropriate for the target users and their tasks.

2. The layout helps focus attention on what to do next.
3. The site can be used without scrolling horizontally.

- Search usability
  1. The default search is intuitive to configure (no Boolean operators).
  2. The search results page shows the user what was searched for and it is easy to edit and resubmit the search.
  3. Search results are clear, useful and ranked by relevance.
- Help, feedback and error tolerance
  1. The FAQ or on-line help provides step-by-step instructions to help users carry out the most important tasks.
  2. It is easy to get help in the right form and at the right time.
  3. Prompts are brief and unambiguous.

4.4. Final Model

After analyzing and comparing several models about the framework specified previously, a complete model propositions has been made. The proposed e-service quality model comprises three big dimensions, which are operational dimension, effectiveness and economic dimension, and finally, e-democracy dimension. These three blocks contained all the dimensions for a complete assessment of the website and the e-services given. There is another important consideration, the model is done from each stakeholder point of view. Therefore, for each stakeholder (Government, companies or citizens) some dimensions or the importance of variables can change because the importance of some aspects of the model can be different for each stakeholder.

A continuation there is a brief explanation of the different dimensions evaluated in the model. The different parameters considered are detailed and also indicated the respective sources in the Annex A.

4.4.1. Operational dimension

<u>Navigation</u>

It's related to the ease of use and webs site design. Ease of use is defined how easy it is for customers to use website. Website should be designed for customer's ease of use, including searching and navigating. It has been highly rated in customer's e-service quality measurement, and it has been noted by many researchers.

It's also very important a good web design, because the deficiency of website design can result in a negative impression of the website quality to the customers, and customers may exit the use of it. Website is the starting point for customers to gain confidence. Because of that, design can influence customer's perceived image of the company, and attract customers for using it with good navigation and useful information on the website. Website should provide appropriate information and multiple useful functions for the stakeholders.

Two important aspects about navigation are web design and functionality. The facts evaluated of each one are the following:

Accessibility

An important aspect of the provision of services is the method of access provided to the user. The main parameters that we have considered are the different channels through which the service may be requested, the type of interface for each channel, the distribution in time and space of access, and the ways in which possible discrimination or inequalities amongst potential users are overcome and the availability of the information in different languages, are important facts.

System availability refers also to the correct technical function of the website. In e-service, the system availability makes customers always accessible to the online service offered. If customers can't use the online system when they need online service, they will switch to some other online companies.

The dimension's levels considered in this category are accessibility for disabled people, webs site loading speed, multilingualism, links availability to download free software and multidevice access.

E-content

It's so important that the information provided is accurate, well distributed and very clear. These suggestions facilitate the users finding the information needed and useful for them. Another important aspect is transparency, which is related to the volume and quality of information provided to the public on the administration's activities. This information may refer to either services or specific processes, and in this case may contain both personal

or aggregate information, and processes of decision making or the mechanisms of implementing public policies. It also includes the availability of information on the rules and regulations related to a service and the commitments undertaken by the administration (response time, possibility of claims, consulting files, etc.).

The principal dimensions needed for evaluate this dimension are general content, specific content and news & updating.

Reliability

Reliability refers to the consistency of performance and dependability of stakeholders. According to some empirical studies, reliability is the most important dimension of e-service quality. In the virtual environment, it is very important to make customers to trust that the company is going to perform what it promises to do or offer the services promised. Reliability can make customers recognize the consistency and credibility of the company or government as well.

Privacy and Security

Privacy refers to the degree to which the website is safe and customer information is protected. This dimension holds an important position. Customers perceive significant risks in the virtual environment of eservice stemming from the possibility of improper use of their financial data and personal data. This important aspect should be a priority for the success of it, trust is strongly related to privacy and security.

Public outreach

This variable may be defined as the level in which opinions, evaluations, complaints or suggestions, made by users of the service may influence any realignment of how it is provided. This may occur both from individual interactions with users as well as opinion surveys, analysis of log files, and further.

Even though there is no direct human interaction in the virtual eservice process, some human contacts are involved in e-service, for example e-mail communication. Providing customer individual attention shows empathy to customers. In the virtual environment of e-service, empathy is important in stakeholder's perception of the e-service quality without face to face encounter.

Organizational / Usability

An organization's structure and the working model of its units represent the basic instrument to carry out its functions. In the case of the e-services, the organizational

structure is one of the fundamental instruments to achieve one of its primary objectives: a well distribution of all the content. A vertical integration prioritizes the general content at the first page and as you go along the information is more precise, whereas a horizontal distribution prefers to divide all the content in different categories. Hierarchicalization gives information about if the relevant information is the easiest to find. On the other hand compartmentalization informs if the website it is very stratified by the content given. Leadership *(source: Model of the assessment e-Government by IE and University of Pennsylvania)*

4.4.2. Effectiveness and economic dimension

Economic

This dimension it's a really important factor for the implementation of the project or not. It's very important to emphasize that this project was not created for obtaining revenues, but it was created for obtaining benefits for the citizens and for the companies. It gives a service and promotes the employment into the country. So the sustainability it's also very important in this project, so the benefits and costs per year are included for a complete evaluation of this aspect. The financial parameters considered are the three principal factors considered in finance for projects assessment: Net present value, pay-back, interest rate of return.

Operational effectiveness

The following two variables shown link the provision of services with the results, on one hand and with the resources employed, on the other. The effectiveness is the degree to which a procedure meets its objectives. In the case of the provision of services, it depends on the extent to which the distribution of services reaches all its potential targets. Efficiency is the rate of effectiveness for a given amount of resources invested, less the undesired consequences of the procedure. It is also measured the efficiency of the training courses available given by the organization, it's important to figure out if they are significant useful or not.

4.4.3. E-democracy dimension

E-participation

By this term we refer to the level of citizen participation in the administration processes, aside from the formal channels of normal political representation. Participation may occur in areas related to public services and in decision making processes linked to the creation of public policies.

The three principal dimensions that include all the content are information available, e-consultation availability and active participation.

Trust and Transparency

In the context of the Internet, trust toward online companies is often regarded as a key factor of ecommerce growth, online success and competitiveness. Trust in e-service is related to the buying and payment process, the reliability of the website, privacy and securities issues, order fulfillment, service delivery, after sales service and the reputation of the company, and all the aspects that make more reliable the customer toward the organization. Customer's trust to online companies is critical for online companies' success.

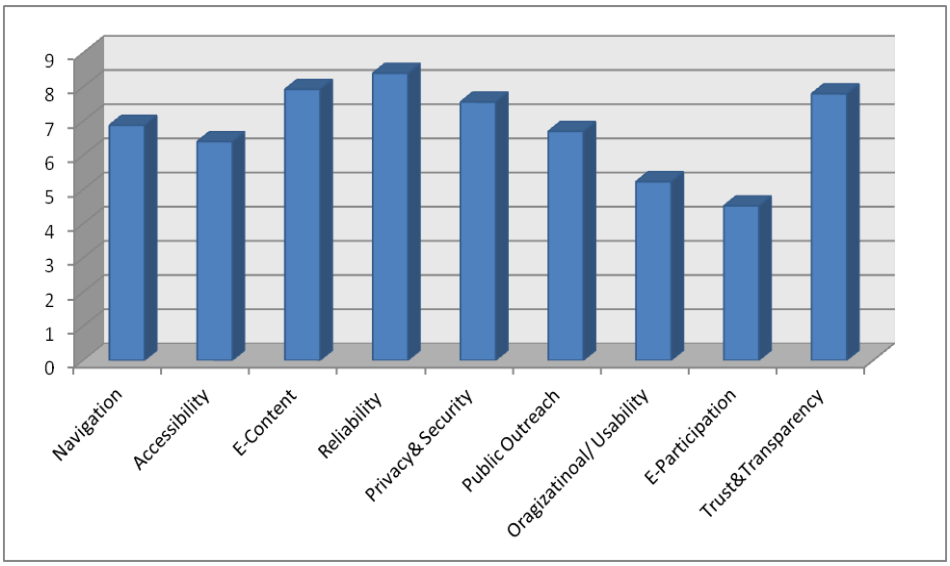
Transparency is related to the volume and quality of information provided to the public on the administration's activities. This information may refer to both services and specific processes, and in this case may contain both personal or aggregate information, and processes of decision making or the mechanisms of implementing public policies. It also includes the availability of information on the rules and regulations related to a service and the commitments undertaken by the administration.

5. Evaluation of the model on SEPE e-services

The model has considered three points of view for each stakeholder: citizens, companies and government. The assessment is only done for the citizen's point of view, evaluating the different dimensions affected by this stakeholder. It was not possible to obtain specific information about effectiveness parameters of the SEPE organization. There was a lack of information, for that reason it is not evaluated the model in the government point of view. In spite of cannot assess that dimension of the model, it is included because it's required for a complete analysis of the dimensions affected for each stakeholder. The value of this project it's to provide the SEPE a complete model that let them obtaining important information for improve the e-services given.

The methodology taken consists in an evaluation done by five persons. They have been informed about the instructions they should follow and an explanation about the meaning of each parameter. The final result of each parameter is the average of the five results obtained. This assessment could be subjective, each person have different mentality and criteria for evaluating, so this procedure of doing averages is more reliable and lows the subjectivity.

The detailed results are available in the Annex B: each person assessment, the averages and the grades of the different dimensions. The different dimensions' results are the following:



Picture 5.1 Results of the different dimensions of the model

The results obtained show that the weakest dimensions in the SEPE are e-Participation and Organizational/ Usability. Through the big amount of services that offered the SEPE it's remarkable that it's not possible to interact on the website with another people who may share common interests as forums, chats or blogs. It can't be assess the website by the users or there are not any blog for suggestions, these appointments would be very interesting and could provided the organization with feedback and know the users preferences. Regarding Organizational/ Usability, this low score is due to the complexity of the website. It's a really complete website that offered so many services for different clusters of citizens, but this make the website a bit complicated for the user because of this large amount of information. Thus, the user probably will be lost, or will spent so much time looking for the service or information he wants. It's very hard to provided so many services as the SEPE and also make simple the usability of the website and allow the user a fast navigation to his objective. The SEPE should structure the information as at first be seen the more relevant information of each category, and as the user goes along show the more specific information. Another simple and efficient measure would be colourly the links used, so it will be simpler for the user to avoid the irrelevant information.

The strengths of this website are Reliability, Trust and Transparency. These two dimensions are very important, and this organization does his best for reach the confidence of the Spanish citizens. All the information is available and public for everyone as accountability information, statistics and graphics of the performance with the source, the site it's supported by the Spanish government, the absence of errors, and further. These aspects make feel the user very confident with the organization and for that reason will incentive more citizens to use this services if they are useful. Privacy and security are well evaluated as well, the citizens feel comfortable giving their personal data. They know it's a secure website and their personal information will be treated privately and with discretion.

Another dimension with a high score is the e-Content. As it's said, there is a lot of information available in this website, and so any services are offered to carry on through this website and obsolete the offices for doing some administrative procedures.

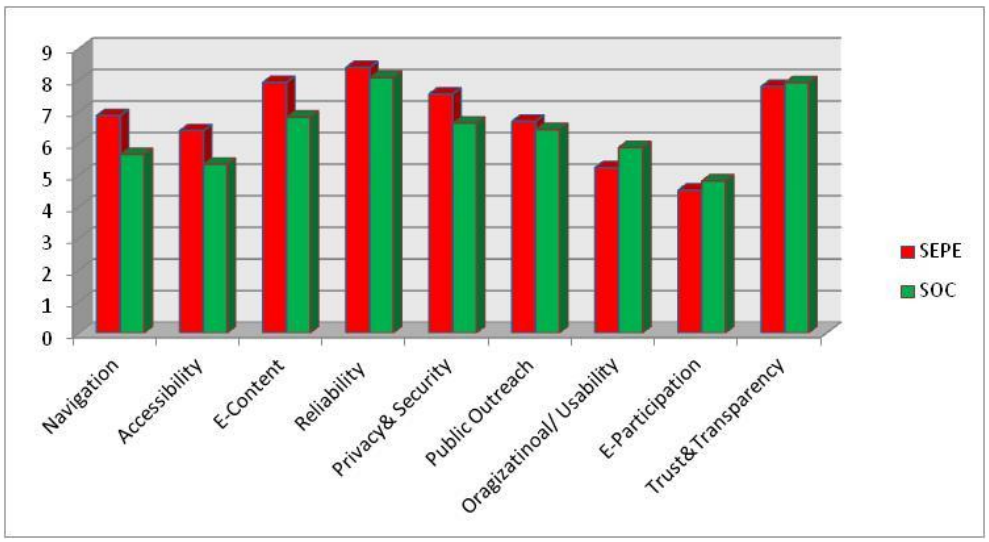
The Accessibility has not a low grade but it should be improved including multimedia explaining how to use better the navigation trough the website or explaining interesting news with subtitles for the disabled people. Another interesting factor would be to increase the foreign languages availability, like French or German. It will favor abroad professionals to come to Spain for business or for getting a job. The globalization of the country is a key factor of the development of it, so it would be an interesting measure for incentive people from abroad to work in this country.

Finally, Navigation has an acceptable score, due mainly because of the good website design. The website it's professionally design and the first impression it's very positive. The information it's well structured and the user know where to start looking, unless as he goes along they would be lost because the complexity of the website. The functionality aspect of this dimension it should be improved with easy actions as color the links used or divided and distribute more efficiently the content for faster search time of the information.

Summing up, SEPE offered a large amount of services very useful for the citizens. Because of the complexity of the website it's easy the user to be lost in such a big amount of information available. The confidence and trust the citizens put in this website is very high because of the transparency and the high level of security. The enhances should be apply in the e-participation dimension as implementing forums, chats or the possibility to make suggestions for the improvement of the services given by this website.

5.1. Benchmark between SEPE and SOC

It's interesting to benchmark similar websites which offered similar e-services as well. The SOC, Servici d'Ocupació de Catalunya, offered services related to employment as find a job or administrative procedures but only in Catalonia. The same model was used for assess the SOC website and the detailed results are in the Annex C. On the following graph can be seen the results in both websites.



Picture 5.2 Results of the different dimensions of the model

The strengths of both webs are identical: Reliability and Trust and Transparency. These dimensions are considered the most important by the users, so they are extremely important for retain the users and encourage more users using the e-services offered through the website. Privacy and Security has really good scores as well, the users feel comfortable giving their personal data because they feel it's a confident and serious website that treated their data with discretion.

However they both have the same problem according to e-Participation and Usability. In terms of e-Participation the lack of forums, chats or blogs, or he possibility to rate the e-government website are important aspects to bear in mind. It would provide these organizations with a very powerful feedback, suggestions, and opinions very useful for trying to improve the e-services given.

According to the Usability it should be improve in both of them. The vertical integration in the SOC is not well structured the information, the most relevant and general information should be in the first pages and the most specific should be as the user goes along. The rate of the vertical integration in the SEPE it's a bit higher, but it should take in consideration. The compartimentalization of the distribution of the information should be bear in mind by the SOC organization for the users' ease of use and comfort.

Accessibility needs some improvements in both websites, as multimedia explaining the website with subtitles for the disabled people, the availability of the site with more foreign languages or multidevice access. In terms of navigation, both websites have good and professional designs, but the SOC functionality should be enhanced. Colour the links used or have links to the home page in all the portals are very important for comfort navigation, and not get lost.

Finally, the general or specific e-Content provided by both websites are very completed and useful, unless in the SEPE much more information is available, as many statistics of employment, courses or trainings.

Concluding, both websites have very high scores in Reliability, and Trust and Transparency, considered by many researchers as the most important dimensions. The users think that these websites are very professional and provided the citizens with many useful services. This will retain the users and attracted more ones. However, the main enhancements of both websites should be in terms of e-Participation. The availability of forums, chats or the possibility to rate the website are useful ideas for knowing the users preferences. The other dimension that should be improved is the Usability dimension, especially in the SOC organization. The information should be more structured and favor a vertical integration, the most relevant and general information seen at first and as the user goes along the most specific.

6. Environmental Impact

This specific project has not remarkable environmental impact if it's considered only the research, the analysis and the creation of the e-services model. However the consequences if this project is applied would have very important impact on the environment. Using correctly this model, the SEPE e-services will be enhance by it and the stakeholders will trust and use it more. Therefore many administrative procedures will not take place at the offices using paper, so a lot of paper will be saved, and the forests more preserve. In the following image can be seen some benefits because of the implementation of the e-government services.

Picture 6.1 Environment Benefits from the e-Government [9]

Because of the implantation of the e-services administrative procedures are more efficient every day and the forest is preserved because less paper is needed. However, there is a slight bad effect on the environment, Information Technology systems need energy.

A typical PC consumes half of the power for its operations and waste the other half as “HEAT” and for the typical server 30% to 40 % of the energy consumed is wasted. This is not a small amount when in the organization thousands of the PC, Laptops are running and datacenters in which number of servers are operating. The heat emitted as waste triggers the demand of air-conditioning which in turn increase the power requirements and the bill associated with it. The more equipment you have that is less efficient the more heat it will generate and that means that more electricity will be required to cool those equipments. Electricity consumed by a typical PC per hour is 250 watts; it means 125 watts of energy is wasted as heat. For that matter, equipment should be energy efficient to avoid electricity to be wasted as heat.

Today there is an increase in the use of internet based communication and internet. Information security is the biggest threat as we are living in the information age. The information service providers like Google maintain information on the servers and whenever the customer requires it, information is retrieved from the servers and is provided to the customers. A data center is a facility equipped with one or more connected servers, used for processing or transmitting data. The Data center operations consumes a lot of energy and companies are looking and searching for number of ways to reduce the energy requirements of their data centers and the cost associated with the energy use.

In summary, the environmental benefits of the application of SEPE e-services, principally the preservation of the forests, are so much higher than the negative impacts it’s caused, as the consumption of energy, thus this project can be considerate as a “green project” that takes in consideration the most value thing that exists, the planet.

7. Budget

This project includes four main tasks which are recompilation of information, study and analysis, creation of the model and the assessment of the SEPE organization using the model. The following table gives the detail of the costs of the indicated tasks. The prices of each professional who is needed for the different tasks are estimated, it could vary a bit.

TASKS	Professional	Time spent [h]	Cost [€/h]	Total cost [€/h]
Information recopilation	Administrative	60	10	600
Study and analysis	Industrial Engineer	90	80	7.200
Model creation	Industrial Engineer	70	80	5.600
SEPE assessment	Industrial Engineer	45	80	3.600
Administrative redaction	Administrative	25	10	250
Travels and diets				200
Project printing				100
Total fees				17.550
Taxes (IVA)			21%	3.685,50
Total				21.235,50 €

The total amount of money required for the implementation of this project is twenty-six thousand one hundred ninety-six point five Euros.

Conclusions

The goal of this project is to provide the SEPE with an efficient and complete model to evaluate all the relevant dimensions in the public e-services framework. According to all the services offered and the different dimensions considered in other studies carried on by other relevant universities, an e-service quality model is created, which pretends to be an important tool for a deep assessment of the SEPE.

The initial assessment shows that the dimensions this organization should improve are the e-Participation and Organizational/ Usability. The website offers many information and services through the portal but it's a bit complex for the user to find quickly the information they want, and sometimes they get lost into this large amount of information available. It's hard to provided so many services as the SEPE and also make simple the usability of the website and allow the user a fast navigation to the relevant information. Two very important improvements would be to structure the information "vertically", as first be seen the more relevant information of each category, and as the user goes along show the more specific information. Another interesting and simple measure for improving the ease of usability of the website it's to colour the links used, so it would be simpler for the user to avoid the irrelevant information.

Referring to the e-Participation dimension, it is remarkable that given the amount of services and information available in the website, it is not possible to create interaction among users who may share common interests as, for instance, forums, chats or blogs. Users are not able to evaluate or asses the website due to the lack of suggestion blogs so, allowing them to share their opinions would be a good point to provide the organization with rewarding feedback and would also help them to understand better their user's preferences.

However, this website it's very good evaluated in terms of Reliability, Trust and Transparency, and e-Content. It has the confidence of the users and this aspect it's extremely important for retain and attracted more users. There is a large amount of general and specific information available for all categories of people: women, youth, aged, unemployed, companies and further.

To sum up, this model has measured and proved that the SEPE is a very useful tool, but it should do some improvements in the Usability and e-Participation dimensions to improve the satisfaction of the users.

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