THE ECONOMIC AND SOCIAL IMPACTS
OF E-GOVERNMENT

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Introduction

E-government is an important factor to promote and develop the country use and provision of electronic services. Over the past few years, governments and administrations across the world recommended to use Information and Communication Technologies (ICT) in much more convenient ways in order to enhance the functioning of the public sector and the services delivery. Given that online delivery systems are available twenty-four seven, users have the opportunity to have and get access to information at their convenience. Thus, their satisfaction is enhanced and in the long run this could lead to an even greater satisfaction with government activities and moreover to an improvement in the existing relationship between government, citizens and businesses.

The main objectives and steps of this research paper will be first to understand the essential features of e-government given that this term is understood differently across the world. It is essential, before going any further, to clearly define the important aspects of the notion of e-government. Therefore a definition of what is e-government will be given, after which we will attempt to describe what are the purposes, objectives and expected outcomes of e-government with the aid of some of its main models.

Then, we will analyze how successful e-government services are implemented. More precisely, the necessary skills required to develop them will be defined. Moreover we will address the question of security. This is a central topic when developing e-government services and wanting to establish trust between them and users.

As in each development process, barriers arise and hamper the development, implementation and progresses promised by e-governments. Therefore we will define and describe them and their legal dimensions. Once these have been established, a range of solutions to overcome them will be listed. Unfortunately we will observe that there isn’t one single way, one single solution to overcome the barriers to e-government. Indeed different barriers will require different solutions to be defeated.
In the past, the citizens and the activities of the administrations were often perceived as too far and too distant. Furthermore, the activities of governments themselves were often perceived as inefficient, time consuming and sometimes disorganized. In our study we want to show that e-government successfully tries to transform these activities not in their scope but in their relation with the citizens, businesses and other public services in order to make them more efficient. Based upon the knowledge gained up to this point, the two next and last chapters will attempt to seize and analyze what are the economic and social impacts of an effective and efficient e-government on society. We will observe that through the use of Information and Communication Technologies not only closer interactions between administration, citizens, businesses and industries are improved but also the quality and the delivery of the service itself. Increased transparency, more convenience, less corruption, fewer costs and consequently higher revenues, better service delivery and less administrative burdens for companies are some of the possible social and economic impacts of an effective e-government.
1 E-government overview

Nowadays, governments provide their services in many different ways. They are able to do this thanks to intermediaries such as post offices or banks. In order to have a successful e-government the information technology solutions, which are at the very base of the e-government infrastructure have to be reachable by all citizens (Reffat 2006, p. 1). Information technologies have to be used in order to create and deliver a service, which is useful and has an effective impact for the businesses and for the citizens.

Nevertheless, information technologies alone are not the only ingredient necessary to create an efficient service, the adoption of those technologies by the users, reliability, integrity and credibility of e-government services are just some between the most important factors likely to advance the way governments operate in this field (Carter and Bélanger 2005, pp. 8-9). Before the analysis of the direct effects of e-government and in order to be able to fully understand them, we will try to give a general but complete definition of it.

1.1 E-government definition

E-government is a word that is widely used nowadays and it’s easy to be misdirected with regard to its definition. A multitude of definitions from different types of sources are present. Accordingly to the subject of our research paper and in order to construct upon we have chosen the following one, given by David McClure, Associate Director of the U.S. General Accounting Office before the U.S. Congress (Layne and Lee 2001, p. 123):

“Electronic government refers to government’s use of technology, particularly web-based Internet applications to enhance the access to and delivery of government information and service to citizens, business partners, employees, other agencies, and government entities. It has the potential to help build better relationships between government and the public by making interaction with citizens smoother, easier, and more efficient. Indeed, government agencies report using electronic commerce to improve core business operations and deliver information and services faster, cheaper, and to wider groups of customers.”
In our opinion, this definition clearly shows at which point electronic government is a service providing a clear benefit to its users. As we will see later in our study, the stakeholders that can be divided between citizens, businesses and the government itself, benefit, among others, of faster and more convenient services, cost reductions and improved efficiency of the current governments’ activities. Nowadays, in Switzerland, in all developed countries and later also in emerging countries, we have all had the opportunity to experience the massive potential of the web in changing the relationship between the individuals. This evolution was not limited to relationships between individuals but it has brought the Web as one of the major components of our relationship also with the business community. In fact, we can for example open a bank account online, order our television or other electronic device online, buy our plane ticket online and so on. Business relationships have been redefined thanks to the Web, they now contribute in helping companies reaching new markets and reducing their expenses. E-government, if we slightly modify the definition seen above, enhances then the relationships, and not just the access and delivery of government information and service to the citizens.

Nevertheless, we have to mention that despite the clear positive impact of it, e-government present also difficulties in its implementation. Firstly, as we will see later in the study, particular skills are required to develop a successful e-government. Secondly, digital government initiatives are a combination of dissimilar managerial, technological and policy related tasks, which are not always easy to understand (Reffat 2006, p. 2). Furthermore, as Silcock stated in the year 2000, the average government has between 50 and 70 different department and agencies (Silcock 2000, p. 89). These numbers have certainly increased in the past decade and this contributes to increase also the complexity of the relationships between citizens, businesses and the government, and of the government itself. E-governments offer a potential solution to this problem but the task of integrating the information and services offered by the different departments of the administration is complex and requires the right skills, capabilities and infrastructure.
1.2 The purposes of e-government

Based mainly on David Coursey and Donald F. Norris 2008 paper we decided to show the purposes, objectives and expected outcomes of e-government through a brief illustration of the main models of it. This analysis was done without going into the detail of the pertinence and validity of those models as the authors do in their research paper\(^1\). The authors selected five models, which are alike in different characteristics.

As we can see in table 1, every model implies that e-government evolves progressively, starting from an emergent on-line presence, which is transformed during the process in order to reach full integration of e-government services and actors. The purpose of this evolution is that each phase is better than the prior one.

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
<th>Phase 5</th>
<th>Phase 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ronaghan (2001)</td>
<td>Emerging presence</td>
<td>Enhanced presence</td>
<td>Interactive</td>
<td>Transactional government</td>
<td>Seamless</td>
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<tr>
<td>Hiller and Bélanger (2001)</td>
<td>Information dissemination</td>
<td>Two-way comm.</td>
<td>Integration</td>
<td>Transaction</td>
<td>Participation</td>
</tr>
<tr>
<td>Westcott (2001)</td>
<td>E-mail and internal network</td>
<td>Enable interorganizational and public access to information</td>
<td>Two-way comm.</td>
<td>Exchange of value</td>
<td>Digital democracy</td>
</tr>
</tbody>
</table>

Table 1: E-government models
Source: Coursey and Norris, 2008, p. 524

As already stated in the previous section, the improvement of the relationships between governments and citizens is a key point in order to effectively measure the economic and social impacts of e-government. This is reflected also in the models seen above. A good example for this aspect is the fifth phase of Baum and Di Maio’s model published in the year 2000: “Transformation”. For the authors of this model, the evolution of the relationship between the government, citizens and businesses changes in a positive way through the transformation of the operational process in phase 4 (“Transaction” stands for the online relations that users can complete) into a more combined and adapted service. The purpose in this model is then to increase citizen trust in governments by enhancing their responsiveness and putting the users (citizens and businesses) in the middle of the equation (Coursey and Norris 2008, p. 524).

If the firsts phases of the five models proposed are mostly similar, the development afterwards is not always the same. In fact, phases one, two and three present the same features in all the models. Those phases include the creation and the beginning of the presence of e-government mainly through simple web sites where basic information is provided. This is followed in phase three by the establishment of the interaction process, which is mainly a two-way communication. This happens in every model and at this stage the interaction between the parties is very basic. An example of communication at this level could be the possibility for the user to file a government form, to search the information needed online, exchange emails…. Following those first phases, every model implies growing complexity and personalization in the transaction between the government and the final user, but we believe Hiller and Belanger’s model to be of particular use in order to further explain the purposes of e-government.

In fact, phase four and phase six of Hiller and Bélanger’s model are of particular interest in order to explain what are and should be, in our opinion, the final drivers of e-government. Firstly, the fourth phase in the table (third of the model itself), “Integration”, refers to the incorporation of data and information within and amid administrations (Coursey and Norris 2008, p. 524). We believe this is related to both horizontal (integration of different functions...
from separate systems in different departments) and vertical (integration of government functions at dissimilar levels) integration and is one of the main purposes of e-government.

Secondly, after the “Transaction” phase that we can find in most of the models and that occurs between government on the one hand and citizens and businesses on the other, Hiller and Bélanger propose the “Participation” phase, last phase of their model. At its final stage, according to this model, e-government enables e-participation. The final and most important purpose of e-government would then be the possibility for users not to simply access services and information but to interact and conduct their business with the government (Coursey and Norris 2008. pp. 523-524). The citizens would finally be allowed to participate to the activities of governance. Furthermore, services such as online voting would allow the increase and promotion of political involvement within a given state or local government.

To summarize, we have identified three main purposes of e-government. The first one is to increase citizens and businesses trust in governments, by putting the users in a central role where they can profit of the increased responsiveness and approachability of the administrations. The second one is the combination of the information and data provided online at all levels of the administration, vertically and horizontally. And the third one is the interaction and more importantly the electronic participation of businesses and citizens in the activities of governance.

2 The implementation of e-government

2.1 The necessary skills for a successful e-government development

Developing e-government is an essential matter in our societies nowadays. E-government projects should not only attract citizens that are already connected on the Internet but also all the others, who are not online yet. Governments need to develop integrated services network projects. In order to implement these projects successfully, several skills are necessary, such as to say project management skills, analytical and technical skills,
information and knowledge management skills and communication and presentation skills (Reffat 2006, pp. 5-6).

Figure 1: Skills required for a successful e-government development
Source: created by the group

2.1.1 Project management skills
It is certainly obvious but nevertheless very important that project management skills are highly required to implement and develop projects, no matter the size of the project. Managing a project is the art of planning, organizing, estimating, managing and allocating resources, negotiating, tracking progresses, measuring results and last but not least communicating. Managing a project also includes the ability to handle time, cost, scope, risk and quality. All those skills are absolutely necessary to guide the project and achieve specific goals (Reffat 2006, p. 6).

2.1.2 Analytical and technical skills
As in any project development, it is important to analyse and interpret the facts at each and every stage of the process. Analytical skills imply the ability of visualizing, articulating, solving problems and taking and making decisions. In a project development process, we start by defining what the problem is and we find out the practices, policies and processes, which are contributing factors. Throughout the process different tools will be required, for example: performance reviews, process analysis, customer satisfaction surveys,
2.1.3 Information and knowledge management skills

Information is a valuable resource. Therefore its content, quality, format, transmission, storage, accessibility, security, usability and preservation highly contribute to its value. Given the many factors to take into account, managing information is a skill, which is required in many different types of jobs. For example IT professionals are counted on to create formats, databases and files, which are used to organise and represent information. Furthermore they also handle security interfaces to ensure integrity and usability (Reffat 2006, p. 5).

In order to develop successfully e-government projects, a knowledge management approach has to be established. This notion involves procedural, structural and factual components; data modelling; artificial intelligence; etc. If knowledge is well managed, it will pay off for governments. Therefore it is fundamental that structures and processes are correctly documented (Reffat 2006, p. 8).

2.1.4 Communication and presentation skills

Communication throughout the project is an ongoing requirement. Indeed all along the process, meeting and presentations about progresses, goals, results and issues have to be organized. For example, meetings with legislative or executive leaders might be necessary to acquire support and funding. Nowadays there exist many different tools for communication, such as e-mail lists, newsletters, etc. In order to communicate the important facts in a clear and simple way, it is important to summarize and categorize information. Nevertheless the latter should not be oversimplified or lead to false conclusions.

Presentation skills do not only imply knowing how to prepare and present a talk or a speech by the aid or not of visuals, it also involves the capacity of taking complex data and
as said previously summarizing and categorizing them in a way that they will be useful for the different audiences (Reffat 2006, p. 6).

As we have read, in order for government to implement integrated services in the most successful way, different fundamentals skills are required. These are the most important ones but of course not the only ones, many other different skills could also be necessary depending on the type of challenge faced.

2.2 Security and trust in e-government

In order for governments to promote the best citizen inclusion, they must take into account the notions of accessibility, integrity, accountability, authentication, transparency and confidentiality in the design, the evaluation and the implementation of their projects. These are fundamental trust-building criteria (Tassabehji 2005, p. 1).

2.2.1 Security in e-government

The concept of security is not new to governments. Indeed since antiquity many different government agents have attempted to insure security to sensitive information. They try to protect them from misuse, modification, destruction, disclosure, unauthorized access, etc. Besides security issues, they are trust of users issues and privacy of information issues. These are identified as the main critical obstacles in the adoption and growth of e-government. In order to overcome those obstacles, security in e-government is evaluated in accordance with the five common security principles of CIAAT, (Tassabehji 2005, p. 3):

1. Confidentiality/Privacy/Accessibility
2. Integrity
3. Accountability/Non-repudiation
4. Authentication
5. Trust

Those principles ensure that information and systems are in their intended and original state and that they are accessed only by those authorized. Moreover they ensure the
authentication of the entities as being the genuine and original ones. And finally they ensure that there is an infrastructure engendering trust and make it visible to the users (Tassabehji 2005, p. 3).

2.2.2 Trust in e-government

Trust has major impacts on the implementation, the use, the effectiveness and the success of e-government services. Moreover it has a direct link with acceptance and growth of such services. To ensure the highest inclusion, governments should have as a strategic aim to develop a trust relationship with citizens and businesses. In order to do so, it is essential to have a deep understanding of this notion of trust. Indeed, in the specific context, trust has a complex and multidimensional meaning. Therefore to have the best understanding as possible, this concept is analysed according to three following criteria (Tassabehji 2005, pp. 3-6):

1. **The constituents of trust**, which is constituted of the privacy of information and citizens; the security of on-line interactions; the confidence in e-government services and the freedom from unwarranted government intrusion into the lives of its citizens (Tassabehji 2005, p. 4).

2. **The domains of trust**, which is constituted of the information; the information systems; the e-commerce and the online relationships (Tassabehji 2005, pp. 4-5).

3. **The measures for building trust**. There exist different measures, which are mapped according to the domain. For the information domain we measure the information quality, more precisely its accuracy, timeliness, up-to-date, validity and relevance. For the information systems domain we measure the financial security and technical solutions. For the e-commerce domain, transparency, auditability and reputation is measured and finally for the online relationship domain we measure the standardisation, the familiarity, the simplicity, the consistency, the relationship building and the marketing and education. All these are complementary and not mutually exclusive to each domain (Tassabehji 2005, pp. 5-6).
2.2.3 Security and trust

Security issues are dictated by confidence, privacy and trust in e-government. Therefore governments have to ensure citizens and businesses that security and privacy matters are highly taken into account through a range of information quality, transparency, technical solutions and long-term relationship. Thus this interaction between confidence, privacy and trust is critical and strategic for governments, citizens, businesses and their inclusion. Everything that has been discussed can be illustrated in the following figure (Tassabehji 2005, pp. 6-8).

![Figure 2: Security in e-government
Source: Tassabehji, R., 2005, p. 7](image)

This figure illustrates the different individuals implicated in e-government security. It separates them into two groups: the internal organisation and the external public. The first group represents the actual security, which is implemented through hard technological factors, which integrate the IT infrastructure and applications needed to protect information and systems and soft management factors, which integrate regulation, controls, legislature, organisational policies, training, etc. Both attempt to provide an infrastructure, which is evaluated in accordance with the common security principles of CIAAT. Thus this
ensures that the criteria of actual security are provided. The second group has a certain perception of the security, which is implemented by the first group. In order to have confidence, privacy and trust, transparency in the processes needs to be ensured (Tassabehji 2005, pp. 6-7).

To summarize, five essential criteria, such as to say confidentiality, integrity, accountability, authentication and trust, need to be integrated into evaluations of e-government services in order to increase citizens’ inclusion in the process. Trust and security in e-government are central matters in the development, implementation and growth of online services. The next chapter will define and list what are the main barriers and their legal foundations, which hamper the progresses promised by e-government. And, as it will be established, trust and security belong to those e-government barriers.

3 The barriers of e-government

3.1 The definition of an e-government barrier

The use of the Internet and other related Information and Communication Technologies has increased in the last few years. However, progresses are hindered by barriers, such as legal and organizational ones. Before identifying the latter, it is essential to first clarify the definition of an e-government barrier in this research field. Several considerations taken into account in a European Commission study has led to define e-government barriers as follows (European Commission 2006, p. 13) quote:

“Characteristics – either real or perceived – of legal, social, technological or institutional context which work against developing e-government at the EU level, either: because they impede demand, by acting as a disincentive or barrier for users to engage with e-government services; or because they impede supply, by acting as a disincentive or barrier for public sector organizations to provide e-government services.”
3.2 The e-government barriers categories

In order to be successful, e-governments, especially European e-governments have for main goals, the achievement of five objectives, which are the five prime EU-level objectives\(^2\). Unfortunately the achievement of these different objectives is hampered. As discussed in the following sections, there exist seven main categories of barriers constraining or blocking progresses promised by governments (European Commission 2006, p. 9) quote:

1. **Leadership failures**: Slow and patchy progress to e-government can result from a lack of adequate leadership during any stage in the initiation, implementation, promotion and ongoing support of developments.

2. **Financial inhibitors**: Concerns about the costs of implementing and developing e-government, together with inappropriate cost/benefit analysis approaches, can constrain or block the flow of investment at the levels necessary to support future e-government innovation.

3. **Digital divides and choices**: Inequalities in skills and access can limit and fragment take-up of e-government. Failure to address clearly the needs of potential e-government users can also hamper take-up of e-government as even those citizens and businesses with appropriate levels of access may choose not to use available e-government services.

4. **Poor coordination**: Lack of coordination and harmonization can put a brake on establishing appropriate e-government networks and services that cross governance, administrative and geographic boundaries.

5. **Workplace and organizational inflexibility**: The realization of e-government benefits can be constrained or blocked by inflexibilities in responding to the need to make necessary changes in public administration practices, processes and organizational structures to allow them to be better able to make appropriate effective use of electronic networking capabilities.

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\(^2\) For more details on these objectives see: European Commission – DG Information Society and Media – Modinis study, Breaking barriers to eGovernment – Overcoming obstacles to improving European public services – A legal and institutional analysis of barriers to eGovernment, 2006, pp. 7-8
6. **Lack of trust**: Heightened fears about inadequate security and privacy safeguards in electronic networks and a general distrust of government can undermine confidence in e-government.

7. **Poor technical design**: Interoperability blockages caused by incompatibilities between ICT systems or difficult-to-use interfaces to e-government services exemplify the kinds of practical flaws that can become serious operational obstacles to take-up of what otherwise appear to be valuable e-government systems.“

As we can observe, obstacles hampering progresses, restricting the adoption, integration and implementation of e-government projects are many and from different natures. Indeed they include financial, technological, policy, planning, skills, organizational and political barriers (Ebrahim and Irani 2005, pp. 601-606; Gaudino and Moro 2010, p. 55; European Commission 2006, p. 9). These different barriers are main categories. Indeed, there exist a multitude of more specific barriers. The awareness of these different main barriers categories are essential to any e-government project team trying to implement processes, services, etc. Thus they will be prepared to overcome all of them.

### 3.3 The legal foundations of e-government barriers

The following sections describe the relevant legal dimensions to several of the main barriers categories discussed previously (European Commission 2006, pp. 10-12; European Commission 2007, p. 4 and pp. 21-72):

1. **Administrative law**: It governs public administration. It refers to the approach adopted in European states. Several formal guarantees for the society are recognized, more precisely in domains where public bodies have important power. The rules, which are incorporated in this law impede sometimes the development, implementation or even consolidation of e-government services.

2. **Authentication and identification**: These subjects belong to a wider one, which is “identity management”. This matter is crucial in e-government projects elaboration. More in depth, the act of authentication is used to establish or confirm that someone or
something is authentic and the act of identification is used to establish or confirm the identity of a person.

3. **Intellectual Property Rights (IPR):** The mean of this law is to protect creative works. The supporting technology and the disseminated information are both subject to IPR. The costs of accessing IPR material are considered as a barrier. Furthermore we can observe trust issues in software, especially open source software, used by e-government.

4. **Liability:** Some e-government activities may result in damages in some circumstances. Thus, in order for citizens, businesses and government to avoid losing trust in e-government, they should be able to compensate their losses.

5. **Privacy and data protection:** This is a central matter of many e-government projects development.

6. **Public administration transparency:** Transparency is promoted through e-government by the aid of a legal vehicle, the Freedom of Information Acts. One of the main problems with transparency in e-government is the lack of awareness of society of the vast range of information, which is available and the difficulty in founding the information needed.

7. **Relationships between public administrations, citizens and other ICT actors:** An effective and efficient communication between all the parties is an essential condition to ensure successful e-government implementation and development.

8. **Re-use of public sector information:** Based on the Public Sector Information directive (PIS), this allows legal entities or persons to use documents for non-commercial or commercial aims, which aren't related to the initial purpose. This is an important directive given that several e-government services rely on such re-use. Unfortunately it doesn’t eliminate all barriers.

Now that the barriers and legal foundations are listed, the relations between them can be established. The following figure shows the level of significance (by the aid of a traffic light system) of the eight legal foundations to the seven barriers hampering e-governments progresses. For example “liability” is the most significant legal dimension for “financial inhibitors”; “privacy and data protection” is the most significant legal dimension for “digital
divides”; etc. This figure is very useful, however it isn’t a precise and definitive evaluation. It might vary over the years and according to the countries.

<table>
<thead>
<tr>
<th>Barriers: Legal area:</th>
<th>Leadership failures</th>
<th>Financial inhibitors</th>
<th>Digital Divides</th>
<th>Poor coordination</th>
<th>Workplace and organizational inflexibility</th>
<th>Lack of trust</th>
<th>Poor technical design</th>
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<tbody>
<tr>
<td>Administrative Law</td>
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<td>Authentication and Identification</td>
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<td>Liability</td>
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<td>Privacy and Data Protection</td>
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<td>Public Administration Transparency</td>
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<td>Relationships</td>
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<td>Re-use of Public Sector Information</td>
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Legend: Red light = very significant, yellow light = significant, green light = not significant

Table 2: Relationship between barriers and legal foundations


This figure enables e-government project teams to understand that each barrier has a connection to nearly all legal dimensions.

3.4 The development of solutions

Now that we have established what are the different barriers, the legal foundations, and their relationships, the following paragraphs will list a range of tangible solutions to overcome them. Unfortunately there isn’t one single way, one single solution to overcome the barriers to e-government. Indeed different barriers will require different solutions to be defeated.

Leadership failure solution: Progresses of e-government can be hindered by management leadership failure. The latter can have as effects a low e-government prioritization in resources allocation and public policies, a poor strategic vision and
planning, etc. In order to avoid these consequences, e-governments should compose a network of champions, more precisely they should create a Chief Information Officer (CIO) position like in most private companies. Their competence and strong leadership will influence positively e-governments’ success. Thus the creation of champions is an opportunity to ensure the achievement of one of the objectives of e-government, such as to say being efficient and effective (European Commission 2007, pp. 8-10).

**Financial inhibitors solution:** The development, implementation and maintenance’s costs of e-government are essential financial inhibitors. Moreover, calculating concrete and long-term benefits turns out to be difficult. Therefore e-government focuses more on clear and short-term costs. Unfortunately this hampers the scope of e-government progress. This is why it is important to understand and work out both benefits and costs. Knowing what the impacts will be is a key element to ensure progress and further development (European Commission 2007, pp. 10-11).

**Digital divides solution:** E-government resources are used by many different organizations, groups and people and in many different ways. Unfortunately an important part of worldwide society hasn’t got access to Internet. But there isn’t a simple divide between those who have those who don’t have Internet access. Instead there is segmented population with different needs. A solution to overcome digital divides would on one side to segment users into specific groups and thus consider them differently. On the other side we should provide society with a right to use e-services. In other words we should increase quality and availability of online services (European Commission 2007, pp. 11-12).

**Poor coordination solution:** From one country to another, we can observe variations in administrative, legal and regulatory regimes. Therefore information flow can be inhibited and blocked by those variations and boundaries. Barriers such as poor coordination between local, regional and central levels of government is considered as an essential one. A simple example to mitigate poor coordination would be to establish a web site that directs users to a range of many different sources via hyperlinks, thus bringing several
information resources from diverse organisations in only one virtual location (European Commission 2007, pp. 12-14).

**Workplace and organizational inflexibility solution:** Some public administration and some people from different staffs may be resistant to innovation and changes, therefore they can impede, weaken or hamper what is necessary to create and provide effective and efficient e-government services. To overcome this inflexibility, staffs should be encouraged to integrate technological innovation into each and every aspect of their work, because changes have taken place at all levels of government (European Commission 2007, pp. 14-15).

**Lack of trust solution:** This is a fundamental matter when developing an e-government project. In order to overcome this trust tension between the necessity of data collection and the fear of data surveillance or data misuse, e-governments should meet trust requirement because it’s a key element to ensure efficient and effective e-government services and citizens should be given ownership of their personal data, in case of low trust situations (European Commission 2007, pp. 15-17).

**Poor technical design solution:** Services and systems unfortunately often perform poorly or even fail due to their low technical interoperability and inefficient and ineffective design. This could have as consequences to hamper relations between citizens, businesses and public agencies. That is why it is crucial that governments invest the same resources into their web sites design as the private sector. Therefore e-government applications should use a user-generated content in order to overcome the traditional design problem (European Commission 2007, pp. 17-19).

To summarize, based notably on the study conducted by the European Commission in 2007, we have tried to list possible and tangible solutions to overcome some of the barriers, which hamper e-government progresses. As we can see these are only a range of possible solutions that could be adopted to overcome the different barriers discussed in this chapter. As we can observe there isn’t one single solution to defeat each barrier, given that it depends on many different factors. The use of Internet and related electronic
information and communication technologies has increasingly grown over the last decade. However, at the same time, many organizational and legal barriers have appeared and hampered further developments and innovations that could benefit our worldwide society. It is therefore fundamental for governments to work on these barriers and establish solutions to overcome, at best, all of them.

A range of concrete solutions for the eight legal foundations has also been developed. Given that this isn’t the central matter of our research study, we have decided not to list and describe them. But for further and more detailed information you can read the study, which has been conducted on this topic.³

4 The economic impacts of e-government

Given that research on e-government is relatively new it’s difficult to concretely evaluate the economic impact of e-government. Furthermore, administrations’ investments for e-government have not been big enough to generate clearly visible macro-economic effects. In this section of our study we will summarize the major identifiable economic impacts. We will try to show their benefits in order to understand the importance of an increasing investment in e-government tools from the administration. In fact, investments in e-government solutions are fundamental in the one hand for the developed countries already providing these services in order to stay at the forefront and continuously improving their e-government services. On the other hand, it’s very also important for emerging countries to invest. Nowadays they can benefit from already established Information and Communication Technologies and therefore increase their focus on what is the ultimate goal of e-government, create benefits for citizens and businesses, the final users.

After the analysis carried out until this point in our research study we can clearly and easily imagine the major economic impacts of e-government. Those include the improved service delivered to businesses in particular, the easily imaginable cost reduction in government

³ For more details on this study, see: European Commission – DG Information Society and Media – Modinis study, Breaking barriers to eGovernment – Overcoming obstacles to improving European public services – A legal and institutional analysis of barriers to eGovernment, 2006
procurement, a better control of government expenditure, better administrative processes and increased revenues for the administration. In the following paragraphs we will analyze more in detail some of those benefits.

4.1 Cost reduction and budget savings

Let’s start from the most common economic impact that any new service should bring to the table; cost reduction and budget savings. E-government contributes to those benefits through the reduced cost of transactions for administrative procedures and via the provision of a better control of expenditure (Bhatnagar 2003, p. 10). The two elements mentioned above can be divided into two single impacts. In fact, on the one hand we have the reduction of the costs in the delivery of services and on the other hand the control of the government expenditure. Those are two separate and direct economic impact of e-government.

Despite an expectation of a clear cost reduction in the delivery of government services, the findings from the empirical research available until today show a little and slowly improving impact in this direction. In fact, we realize that cost reduction has not really taken place. The research carried out by David Coursey and Donald F. Norris in 2008 in their evaluation of e-government models which we have partly seen in the first chapter of our study, shows clear results in this matter. We won’t go into each detail of the sample of the survey and all results shown but we will provide the major evidence in support of our thesis⁴. The research, which shows the evolution of the impacts over three periods of time (2000, 2002 and 2004), divides cost impacts in reduced number of staff, an increased non-tax revenue and reduced administrative costs. As we can see in the table below, the results are disappointing with regard to the objective of our study.

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In the one hand, the evolution has been slow and only a reduction in administrative costs seems affirmed. On the other hand, no one can deny that e-government has an impact on costs and, furthermore, the data that we were able to find can be considered as old in this field. We still believe, after the analysis made up to this point, that the impacts on direct costs coming from e-government solutions will be affirmed in the future findings of technology and government literature.

As it is the case in any industry, a critical mass of users is needed in order to create economies of scales and therefore reduce costs. One of the reasons of the little impact seen in the table above can be the fact that, initially, costs are high. In fact, investments are needed in order to establish the platform and the effective delivery of services. In order to experience direct cost reduction after the initial investment it’s important that a certain number of users are present. This will allow, for example, a reduction in the number of persons employed in delivering services through the traditional channel and, subsequently, reduce costs. Also, e-government can help in controlling government expenditure in a better way. For instance, as professor Bhatnagar specified in his paper on the economic and social impact of e-government, the control and tracking of payments made out of government treasuries may be enhanced through the implementation of integrated financial management systems. Another possibility with regard to government expenditure is the implementation of paper less offices, which might also reduce the costs (Bhatnagar 2003, p. 17).

Cost reduction impacts are not the only economic effect existent. The debt crisis within the euro-zone, which is striking the PIIGS countries (Portugal, Ireland, Italy, Greece and Spain) and also reaching more solid countries such as France, Austria and Belgium, has shown within the governments of the most touched countries some issues, which are
directly related to the topic of our study. The more evident, in relation to the economic impact of e-government are the costs of politics and tax evasion. In Greece and Italy, for example costs of politics are very high. This is also partially due to the old-fashioned and traditional way of providing government services. Many resources could be spared with the help of e-government in this matter. For instance, a successful e-government would help in better managing all the political costs within a given country. All the benefits including different expense reimbursement, voucher for public transportations and for car fuel, and plenty other privileges granted to government officials particularly in Italy could be tracked in a more efficient way and, furthermore, abuses might be put to an end. We might also say that, even if this it’s still very difficult also in countries such as Italy, the implementation of just a simple and efficient e-voting tool could already grant important economic benefits to the subjected country. Of course, this is just an example and, moreover, just one suggestion for a small part of the puzzle of solutions that is needed to solve the many problems in the way politics and policymaking is implemented in those countries.

4.2 Tax revenues

As specified in the previous paragraph, another fundamental issue for countries such as Italy and Greece is the problem of tax evasion. In fact, many are the citizens, which evaded their tax duties in the past years and led their governments in a situation of serious needs of funding. This is one of the consequences of the incapability and the inefficiency of those governments in the collection of taxes. A successful e-government might have a major economic impact on the growth of tax revenues for such countries. Modernizing and creating efficient tax system through e-government services has already been a key priority for many countries. For instance, online tax filing and processing systems could help governments in enhancing the transparency and reducing corruption\(^5\), which might lead to a better public trust.

A concrete example is the e-tax system in Mexico, which already in 2003 was able to collect 80% of tax revenues and in consequence saved significant costs in the process.

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\(^5\) We will see more in detail the impact of e-government applications on corruption in the next chapter of our study treating the social impacts of e-government.
Another example is Chile where the government has been seeing significant cost saving and better accuracy with over 400’000 tax payers checking their assessments and 200’000 submitting taxes online already in 2003 (Bhatnagar 2003, p. 18). Also in Switzerland the cantons have been implementing e-tax tools. Those allow the users to quickly fulfill their tax declaration without the need to go through the traditional and less comfortable channels. It allows the government to reduce costs and increase the efficiency and transparency of tax collection.

4.3 Administrative processes

Always according to the survey of Coursey and Norris, impacts of e-government have been felt also in non-directly related to costs areas. For instance, thanks to a better administrative process, around 60 per cent of the governments answering to the survey were able to confirm an improved communication to the public and 53 per cent of them also an improved customer service. A controversial fact regards the demand on staff. In the one hand, according to the results, more governments noted an increased (28 per cent in 2004) demand than a reduced demand for staff (Coursey and Norris 2008, p. 529). On the other hand, since the survey was carried out in the early years 2000, this might be explained by the need of investment into e-government applications and therefore also an increased need of staff in order to ensure their development and implementation.

As we have seen in the third chapter of our study, the barriers to e-government are numerous in regard to adoption and development. Technical barriers were particularly important in limiting the economic impacts of e-government. The Survey of Coursey and Norris identifies the lack of financing as the biggest one. Certainly the Internet bubble bursting in 2001, a period where e-government applications were in their phase of development in many countries, didn’t help governments in finding financial resources to invest. Furthermore, the economic impact of e-government in the past decade where undoubtedly limited also by the subprime crisis in 2007-2008 and the consequent economic crisis in 2008-2009. Nowadays, developed countries face austerity measures in order to decrease their debt burdens and finding resources to invest in e-government applications might be difficult for some of them, particularly in Europe. Also, we might
imagine the complications for the administrations in finding qualified staff when the private sector probably offers higher wages and is constantly in need of employees skilled in Information and Communication Technology.

The difficulties in creating effective economics impacts don't have to be seen as an insurmountable obstacle. Those difficulties can be erased via the cooperation between administrations. This should take place between different governments but also at different level of the same government. The processes are not very different between different administrations and applications working effectively should be leveraged in order to reduce investment and development costs as well as to improve standardisation and simplification.

4.4 Economic location

According to the Swiss' e-government strategy approved by the federal council in January 2007, the usage of e-government has the benefit to increase the quality of the economic location as well. As already mentioned before in our study, businesses’ demand for electronic services provided from the authorities is very high. Thanks to those services businesses would be considerably relieved of a work that has to be done within any firm but that it's not value creating at all. Ultimately, this would benefit to an entire region (in the case of a local government) or to the country as a whole. The effects of an increase in efficiency in the services provided by the government to the firms would be, between others, an increase attractiveness of the country as a business location which will help in creating cluster of businesses, an increased competitiveness, new employment and ultimately productivity and economic growth (Federal Council 2009, p. 5).

Having assessed some of the most important economic impacts as well as the difficulties in evaluating them and in increasing their influence we will now move into the next chapter of our study, which will evaluate the social impacts of e-government.
5 The social impacts of e-government

As already mentioned in the previous chapter, researches conducted on the impacts of e-government are recent. Therefore it is still complicated to find concrete evidence of these impacts. But in this chapter we will try to identify and summarize the major identifiable ones. As we have discussed in chapter three, there exist many barriers hampering progresses promised by e-governments. Overcoming some of them, will allow governments to achieve social impacts on society, such as to say improving and increasing transparency. This will have as a consequence to reduce corruption, which is also part of social impacts. Moreover some have been observed in service delivery. And last but not least e-governments have enabled to empower rural communities, thus bridging the digital divide (which is a barrier also discussed in chapter three) (Bhatnagar 2003, pp. 9-17). The following sections will analyze in more depth those main and major impacts.

5.1 Transparency and corruption

As already described in chapter three, transparency is an essential matter in the development of e-government services. Indeed it allows establishing trust between them and users. The latter unfortunately rarely understand how decisions are made by governments (Reffat 2006, p. 11). Albeit only few governments have expressed the willingness to set transparency as one of their goals, some reinforcements have been made and gains have been observed. This leaded notably to less corruption. Indeed through different applications, e-governments make some type of information transparent to users, which in the end results in reduced corruption (Bhatnagar 2003, p. 11). As outlined, different types of information are made transparent. The following paragraph will describe some examples from different countries worldwide.

6 For more examples and more details see Bhatnagar S., The Economic and Social Impact of E-government, Indian Institute of Management, Ahmedabad, June 2003, pp. 24-37.
In many countries worldwide, governments commit to develop websites in which information about procedures and rules governing services, public officials responsible for different tasks, citizen’s charter, etc. are made transparent. This leads to standardized procedures concerning service delivery, to reduced arbitrariness, etc. (Bhatnagar 2003, p. 11). A further example would be the CRISTAL website of the Argentinian government. Corruption was a major political issue during the electoral campaign in 1999. Therefore one of the candidates for presidency promised to eliminate corrupt practices and regain the confidence of citizens if he was elected. The website publishes information on the economic performance of the country, corruption controlling and national policies; statistical data on employment, trade, incomes, etc.; information about the distribution of public funds; etc. This enabled greater transparency and offered the website favourable attention in the press. It also authorized greater accountability and civic engagement in governance. Due to departments’ lack of compliance to submit information and data in time, the website has had unfortunately difficulties operationally, although it was initially a success (Bhatnagar 2003, p. 31). A last example would be the government agency design in India, such as to say the central vigilance commission. The following information were made transparent: the names of the citizens with large outstanding loans and taxes; investigating agencies’ performance; the corruption’s index; the names of civil servants who were either under investigation or convicted; etc. This website was overall created to monitor corruption, which proved to be very efficient and effective (Bhatnagar 2003, pp. 11-12).

To summarize different applications across the world, which have been designed, developed and implemented by e-governments, prove to be successful. They notably allow reducing bribes, reducing brokers’ power, raising public awareness and increasing transparency and accountability, in other words they help reducing corruption in the public sector (Bhatnagar 2003, pp. 12-13; Reffat 2006, p. 11). Of course there is still a lot to do, so that corruption decreases worldwide. Therefore e-governments need to be considered as a tool, which combats corruption. Moreover it has to be implemented as a part of a wider program, because one single department implementing e-government won’t be able to eradicate corruption alone (Bhatnagar 2003, p. 16). But e-governments are on the right path towards reaching this objective.
5.2 Service delivery and digital divide

An increasing efficiency and effectiveness in service delivery has been observed in the last few years. In fact many projects have been designed and developed to enhance efficiency and effectiveness in terms of timeframe and numbers of steps and actors involved in processes. Due to those different applications, processes have become automated, and therefore require less time. Thus, e-government projects often imply the notion of simplification. Studies have been conducted to calculate the gains gained through different types of applications, in different countries around the world (Bhatnagar 2003, p. 14). The following figure illustrates some significant examples.

<table>
<thead>
<tr>
<th>Country</th>
<th>Type of application</th>
<th>Number of days to process before application</th>
<th>Number of days to process after application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citizen’s service center, Bahia, Brazil</td>
<td>Registration of 29 documents</td>
<td>Several days</td>
<td>20-30 minutes per document, one day for business licenses</td>
</tr>
<tr>
<td>Chilean tax system online</td>
<td>Filing taxes online</td>
<td>25 days</td>
<td>12 hours</td>
</tr>
<tr>
<td>Mandal Computers, AP India</td>
<td>Issue of caste certificates</td>
<td>20-30 days</td>
<td>15 minutes</td>
</tr>
<tr>
<td>Online tax, Singapore</td>
<td>Issue of tax assessments</td>
<td>12-18 months</td>
<td>3-5 months</td>
</tr>
</tbody>
</table>

Table 4: Examples of efficiency gains
Source: Bhatnagar, 2003, pp. 14-15

To summarize, some of the efficiency and effectiveness gains, which were reported are more transparency leading to less corruption, which has already been discussed and outlined several times in our research study; less time in transaction completion; fewer intermediaries; faster processing; reduced trips to government offices, which reduces travel cost for citizens; improved access to government offices; more authentic information and documents; service delivery to a larger segment of population; and many more (Bhatnagar 2003, p. 10 and pp. 14-15).
Although service delivery has improved and e-governments have allowed providing services and information to communities, which have a limited access to government, digital divide still remains an obstacle to this delivery. As a reminder digital divide describes the gap between individuals that have access to the Internet and those that don’t (Reffat 2006, p. 10). This topic is largely discussed worldwide because nowadays without any computer skills or Internet access it is difficult, sometimes even impossible to cope with the system. Thus we may have the best efficient and effective service delivery, as long as individuals don’t have access to Internet or don’t have the skills required using the Internet, digital divide between computer literates and non-literates will remain. As already outlined in chapter three there isn’t a simple way to divide these literates and non-literates. Instead there is segmented population with different needs (European Commission 2007, pp. 11-12).

Most of the first countries, which have developed e-government infrastructures, were English-speaking countries like the USA, England and Canada. Not all the other countries, with other languages and other cultures have the same model of development. This is due to their different infrastructures, power structure and beliefs. Take as an example some Latin American countries; they unfortunately don’t have the same telecommunication infrastructure as in the USA. Pilot projects have been developed in Asia, Africa and Latin America. The aim of these projects was to open Internet kiosks in rural communities. Unfortunately the results haven’t been those expected. In terms of economic viability, it wasn’t a complete success. Several conclusions were drawn from the failures but also successes of this projects: rural communities were ready to pay a fee for this system; the added-value of this system had to be proved; intermediaries are required to help, explain and inform rural citizens; and the poor infrastructure has a huge impact on the viability of the system (Bhatnagar 2003, pp. 15-16; Reffat 2006, p. 10).

Some authors have questioned whether e-government helps bridging or worsens digital divide. Answers to this question differ from one another. E-government services have the opportunity to establish new means of communication with society. Therefore it should invest in programs, which will reach out to those who don’t have access to Internet, by providing them with training, knowledge, etc. Indeed, for example in the USA foundations
have been created and projects have been developed in order to attempt to provide underserved population, including elderly, parents, youth and children with computer knowledge, trainings and Internet access. Thus they attempt to bridge those digital divides. However they shouldn’t diminish on other forms of service delivery (Reffat 2006, pp. 10-11; Silicon 2011; Digital Bridge Foundation 2011).

Nowadays being connected implicates acquiring social capital. Indeed once somebody has access to ICTs, this enhances its future cultural and social capital. The latter is acquired through recurrent interactions with groups of individuals or simply other individuals (Mossberger and al. 2006). This last sentence allows us the make the link to the next section. As we will discuss, interactions are one of the main domains in which e-government has an important impact.

## 5.3 Interactions

One of the main impacts domains of e-government, as already seen in the previous chapters is “interactions”, for instance interactions within a government and external interactions with citizens and businesses.

<table>
<thead>
<tr>
<th></th>
<th>Positive (%)</th>
<th>Negative (%)</th>
<th>Neither positive nor negative (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved coordination/cooperation/G2G</td>
<td>71</td>
<td>7</td>
<td>21</td>
</tr>
<tr>
<td>Citizen-public sector interaction</td>
<td>85</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Private-sector public-sector interactions</td>
<td>75</td>
<td>8</td>
<td>17</td>
</tr>
<tr>
<td>Citizen-citizen interactions</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Organizational control and power</td>
<td>75</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>8</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 5: Impacts on interactions (2003-2009)

Source: Andersen and al. 2003-2009, p. 572

Different authors between 2003 and 2009 have conducted a study. Their objective was to explore impacts of e-government through 55 different articles. The impacts were
conceptualized into four domains: capabilities, interactions, orientations and value distribution. As part of our chapter, we concentrated our attention on the results regarding the second domain, interactions. They notably tried assessing how Information and Communication Technology affected patterns of control and power, communication among units, the coordination of tasks or policies and the cooperation (Andersen et Al. 2003-2009, pp. 565-566). Different parameters were evaluated, for instance: improved coordination/cooperation/government to government (G2G); citizen-public sector interactions; private-sector public-sector interactions; citizen-citizen interactions; and organizational control and power. To very briefly summarize their findings, as shown in the figure below, they were generally positive (80%). Thus ICT has eased the linkages between governments and those they serve\(^7\) (Andersen et Al. 2003-2009, pp. 572-574).

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Conclusion

Within our research paper we were able to understand the purposes, the implementation and the main barriers of e-government. Through the assessment of those elements we were finally able to state the most important economic and social impacts of e-government. We have also clearly seen the difficulties in the evaluation of the selected impacts, and particularly the economic ones. These difficulties are reflected in the problems evaluated in the implementation of a successful e-government. In fact, a certain set of skills and the ability to face a certain set of barriers is needed in order to find viable solutions to overcome them and to give birth to more effective and durable impacts.

We believe an important element in the coming years will be for governments to focus and develop specific and needed services. Concretely, this means that administrations have to focus on objectives realistically reachable, which have already proved to have a concrete impact. The availability of resources, particularly financial resources, is likely to be reduced in the future. Therefore, an actual plan has to be realized before the implementation of e-government services. Such a plan, including concrete budgeting, an analysis of the needs, the availability of resources, the regulatory environment and clearly stating the expected impacts, is likely to reduce the possibility for a certain e-government service which is being implemented to be terminated due to the lack of an effective impact or resources.

Besides this challenges, as we have seen in the fourth and fifth chapter, a successful e-government implementation raises noteworthy opportunities for the realization of significant economic and social impacts. We believe the success of e-government applications in Switzerland, thanks to a thorough implementation and strategy, to be a good example. The process of changing the relationship between citizens, businesses and administration certainly doesn’t appear to be simple but shows a vast potential for a better interaction, which so far, as we have had the opportunity to see, has just partly been exploited. In the one hand the needs for e-government applications in developed and emerging countries and the increasing political interest are established. In the other hand, a better cooperation between the administrations, long term objectives and commitment as well as the availability of resources so as to overcome challenges and barriers have to be
given realities in order to efficiently increase the economic and social impacts of e-government in the coming years.
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