Turkish e-Government Transformation: A Country Analysis Based on Efforts, Problems and Solutions

By

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ABSTRACT

This study analyzes the e-Government transformation in Turkey by presenting a detailed history of efforts between 1990 and 2011. The first chapter of this study presents the focus of the research as an introduction to the subject while the second chapter summarizes the important governmental and institutional developments experienced in the analyzed time frame. The third chapter focuses on evaluating the success of transformation by using data obtained from local sources while the fourth one does the same thing by using data obtained from international benchmark studies. The fifth chapter identifies the problems associated with effectively realizing the e-Government transformation by merging the results of previous analyses with the results of other studies in the literature, and the sixth one proposes solutions to these problems by discussing possible alternatives for each of them considering the problem domain and the current capabilities of the Turkish governmental system. The last chapter before the conclusion presents the developments in two countries which have been applying totally different approaches but successfully realizing an e-Government transformation. The study ends with the conclusion that Turkey should have a well-defined long term strategy and a long term transformation plan developed and implemented by a central authority. However it also emphasizes that all of the other proposed solutions except the existence of a long term strategy and a transformation plan are unique to Turkey similar to those in the countries presented in the previous examples.

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BIOGRAPHY

Gökhan İskender is an ICT expert who works for Information and Communication Technologies Authority (ICTA) of Turkey. He started his professional career in this authority as an assistant ICT expert in 2003 and he wrote an expertise thesis in 2006 named "Anti-competitive Pricing Practices in Electronic Communications Sector and Regulatory Approaches" to be promoted to the position of ICT expert. He has a BS degree from Business Administration Department of Middle East Technical University in addition to an MS degree with a thesis option from Information Systems Department of the same university. His master's thesis named "Analysis of e- Signature in Turkey from the Economic and Legal Perspectives and the Awareness Level in the Country" focuses on practical, legal and economic implementation of electronic signature in addition to awareness level, which are the key areas that combine his undergraduate education with his graduate education in an interdisciplinary manner.

Currently his academic interests include e-Government transformation, management information systems, information economy, cyber law and game theory while his general interests include playing guitar, dealing with capoeira, taking 3D photographs and designing useful gadgets by computer modeling tools.

His friends describe him as a creative and hardworking personality with good communication skills and high sense of humor.

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1. INTRODUCTION AND FOCUS OF THE RESEARCH

The concept of Electronic Government (e-Government) has many definitions in the literature. Some of these definitions focus on the technical side of the subject including information technologies, standards, procedures and interoperability methods while some others focus on the social, legal and economic sides including users' perceptions, laws or costs. As the subject includes many different aspects which might be analyzed from many different perspectives according to the point of view and as the ultimate aim of this master's thesis is to do a country-wide analysis which focuses on presenting the story of Turkish e-Government Transformation by evaluating its success level using local and international data, the concept of e-Government should be defined in a generic and a holistic way which focuses on the functions and outputs of e-Government rather than its entities for this study. Considering this need, it is proper to use the definition of Toni Carbo and James G. Williams which defines e-Government as "*the use of information technologies (IT) and, in particular, the internet, to deliver government information and services and to involve citizens in the democratic process and real-time government decision making in a much more convenient, customer-oriented (citizen-centric), cost-effective and potentially altogether different and better way.*" [1] After this point, the term e-Government will be used parallel to this definition in this study emphasizing its functions and outputs rather than its entities.

First transformation efforts related to the e-Government subject started at the end of the 1990's in Turkey. Similar to the developments in other countries, accelerated growth in the internet usage which was supported by rapid changes in information and communication technologies (ICTs) created a demand for the e-Government services in Turkish public institutions. As in other countries which provide e-Government services, this demand was originated from the success stories of e-commerce and e-business in the private sector and it was also supported by the undertakings given to the international organizations like the European Union (EU) or the United Nations (UN). The research proposed in this master's thesis will focus on analyzing the success level of Turkish e-Government transformation efforts between the end of the 1990's and today, particularly focusing on the period between 2003

and 2011. The success level of these efforts will be evaluated by using data obtained from local and international sources in addition to information obtained from other studies prepared by the researchers focusing on the e-Government issue in Turkey. Local data sources will include reports and statistics produced by public institutions and legal documents published by government while international data sources will include reports prepared by regional and international organizations. The studies focusing on the e-Government issue will include papers and theses prepared by Turkish academicians. The main focus of this study is to provide a base for the researchers who are interested in e-Government transformation subject in Turkey by discussing and identifying common and country specific problem sources. The study will investigate these problems and probable solutions of them by analyzing the information obtained from the sources stated above.

2. DEVELOPMENT OF E-GOVERNMENT CONCEPT IN TURKEY

2.1 The Era between 1990 and 2003

The efforts of the 1990's to realize e-Government transformation in Turkey started with a simple approach very similar to the ones in other countries. This simple approach was creating websites for public institutions and providing descriptive information to the citizens about the official processes performed in these public institutions. This period was only focusing on giving information to citizens rather than getting information from them and using it in governmental processes. In other words, websites were used as the user manuals of public institutions which were still continuing to provide their services manually without using electronic networks and IT infrastructure. With the developments in computer networking and increasing internet penetration, the following decade was characterized by simple to intermediate two-way communication styles combined with the intra-governmental use of electronic systems. Public institutions which already had websites started to use their websites to provide simple electronic forms which could be used in connection with the electronic systems designed for internal use. The remaining public institutions which did not have websites started to establish them and present downloadable materials over these new websites which could be printed,

filled out and submitted manually to the institution again. Each public institution implemented a separate e-Government effort. This created distributed databases which lacked interoperability and a common set of rules. This led to efficiency problems because citizens needed to learn the systems of all institutions they were dealing with. [2] The most famous three projects of this era were the Internet Tax Project named VEDOP (**Ve**rgi **D**aireleri **O**tomasyon **P**rojesi) [3] developed by Ministry of Finance to connect all the tax offices by using the IT infrastructure, the Central Population Management System named MERNIS (**Me**rkezi **N**üfus **İ**daresi **S**istemi) developed by Ministry of Internal Affairs to give every Turkish citizen a unique ID number to be used in government related tasks [4] and the National Judiciary Informatics System named UYAP (**U**lusal **Y**argı **A**ğı **P**rojesi) developed by Ministry of Justice to automate and accelerate the processes between courts and other judicial entities. [5] The first two of these projects were initiated in 1998 while the third one was initiated in 2000.

With the developments in broadband technologies in the mid-2000's, the trend of developing separate, non-integrated web-based systems became uncontrollable not only in Turkey but also in many other countries. As a result of this, regional organizations like the European Union (EU) and international organizations like the United Nations (UN) started to emphasize the importance of following a centric approach based on standards and common set of rules to unify e-Government transformation efforts in member countries. The first reflection of this approach to Turkish Governmental System was the e-Government Chapter dedicated to subject under the Urgent Action Plan released on 3 January 2003. [6] This chapter emphasized the importance of using information technologies in government related tasks to increase the efficiency and affectivity in the process of diminishing bureaucracy and it proposed a new project named "e-Transformation Turkey Project" which would be completed under the custody of one of the Deputy Prime Ministers with the coordination of the State Planning Organization (currently Ministry of Development) to achieve this aim.

2.2 The Era between 2003 and 2011

While the Urgent Action Plan emphasized the importance of the "e-Transformation Turkey Project" it did not define the aims, institutional structure and application procedures related to it. As a result of this, the Prime Ministry of Turkey published a circular on 27 February 2003, named "e-Transformation Turkey Project" to clarify these issues. [7] According to this circular the project had two strategic goals which were:

- Citizen focused service transformation.
- Modernization in public administration.

To achieve these two strategic goals eight working groups had been established which were: [7]

1. Education and Human Resources Working Group: Ministry of National Education
2. Technical Infrastructure and Information Security Working Group: Ministry of Transport (currently Ministry of Transport, Maritime Affairs and Communications)
3. Legal Infrastructure Working Group: Ministry of Justice
4. e-Government Working Group: State Planning Organization (currently Ministry of Development)
5. e-Commerce Working Group: Undersecretariat of The Prime Ministry for Foreign Trade (currently Ministry of Economy)
6. Standards Working Group: Turkish Standards Institution
7. e-Health Working Group: Ministry of Health
8. Monitoring Group: Informatics Association of Turkey

The circular published by the Prime Ministry of Turkey on 27 February 2003 was the first official document defining the country-wide strategic goals and establishing governmental level working groups to achieve these goals by using a centric approach. After this circular, the

process continued with the significant developments summarized below in the period between 2003 and 2011. [8][1]

Date	Development
14 June 2003	The amendment of the Law on Consumer Protection No: 4077 with the Law No: 4822 came into force. This amendment added new articles to the old law to regulate e-Commerce activities which had not existed in the old version of the law. [9]
9 October 2003	The Right to Information Law No: 4982 was enacted by Turkish Parliament. [10]
4 December 2003	The Prime Ministry of Turkey published another circular to approve the Short Term Action Plan defining the framework of the e-Transformation Turkey Project between 2003 and 2004. The plan had 8 sections covering 73 action items. 23 of these 73 action items were related to e-Government transformation. [11]
23 January 2004	Electronic Signature Law No: 5070 enacted by Turkish Parliament on 15 January 2004 came into force. [12]
26 April 2004	The Right to Information Law No: 4982 came into force. [10]
1 May 2004	e-Filling (e-Bildirge) which was a social security project for employers became operational in the entire country for the private as well as the public sector. [13]

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[1] Source: European Commission, e-Government in Turkey, November 2011. The information presented in the original study was used to form a condensed chronology summarizing developments between 2003 and 2011. Each development in the chronology was cross checked, updated and referenced by using the website of related authority to revise and enhance the final information.

31 July 2004	Ministry of Finance initiated a new system named e-Returns (e-İade) integrated to the Internet Tax Project (VEDOP) to connect the citizens to the tax offices by allowing them to submit their tax returns online. The main aim of the system was to combat the informal economy better and it was the first project using electronic signature as a tool after the Electronic Signature Law No: 5070 came into force in Turkey. [14]
1 October 2004	Ministry of Finance enhanced the e-Returns system by adding e-Declaration (e-Beyanname) module providing capability to collect tax statements through internet. [15]
23 February 2005	Ministry of Internal Affairs initiated the Identity Sharing System (ISS). ISS provided a way to transfer ID-based information of the Central Population Management System (MERNIS) between public institutions in a secure way [16]
24 March 2005	Higher Planning Board established under the State Planning Organization (currently Ministry of Development) published the e-Transformation Turkey 2005 Action Plan containing 50 actions. This action plan was the second short term action plan after the one covering period between 2003 and 2004. [17]
25 May 2005	With the aim of preparing the National Information Society Strategy of Turkey, a contract was signed between Peppers and Rogers Group and the State Planning Organization (currently Ministry of Development). Peppers and Rogers Group prepared a long term action plan for public institutions which contains the strategies to be followed between 2006 and 2010. [18]

30 July 2005	Information and Communication Technologies Authority of Turkey (ICTA) authorized the Public Certificate Center established under the Scientific and Technological Research Council of Turkey as the root certificate provider for the private electronic signature providers. The authority also licensed two private electronic certificate service providers to provide electronic signatures to citizens. One of them was authorized on 24 June 2005 while the other was authorized on 16 July 2005. [19]
1 August 2005	The State Planning Organization (currently Ministry of Development) published the Interoperability Framework 1.0. The responsible department for the implementation of this framework was the Information Society Department of the organization and the main aim of it was to provide a way for public institutions to share their electronic documents in a standardized and secure way. The framework was the first central action of the administration focusing on the interoperability issue. [20]
7 November 2005	The project of developing the first Turkish e-Government portal started with the contract signed between the incumbent fixed line operator of Turkey (Turkish Telecom) and a consortium formed by Oytek Technologies (Turkey) and Crimson Logic (Singapore). The main aim of the portal was to create an access path to all e-Government services from a single gateway. [21]
20 April 2006	The job of developing the first Turkish e-Government portal was transferred to another government company named TurkSAT to overcome the administrative and legal problems related to privatization process of Turkish Telecom. [22]

11 May 2006	e-School (e-Okul) project was initiated by Ministry of National Education. The project combined ID information of children saved in the database of Central Population Management System (MERNIS) with the school information saved in the database of Ministry of National Education. The project was one of the first important projects combining two large scale databases in a fast and an effective way with the help of IT infrastructure and providing timely and accurate information both for children and parents. [23]
08 June 2006	Undersecretariat of Treasury established Turkish Investment Portal. The main aim of this portal was to supply information for foreign entrepreneurs who want to invest in Turkey. Later on, the responsibility of running the portal was given to the Investment Support and Promotion Agency (ISPAT) [24]
28 July 2006	Higher Planning Board established under the State Planning Organization (currently Ministry of Development) published the Action Plan for National Information Society Strategy containing strategies to be followed for e-Government Transformation between 2006 and 2010. There were 7 priorities and 111 actions connected to these priorities in this action plan. The priorities were:

- Social transformation
- Adoption of ICT by business
- Citizen-centered service transformation
- Modernization in public administration
- A globally competitive ICT sector
- Competitive, widespread and affordable communication infrastructure services
- Improvement of R&D and innovation [25]

1 September 2006	Information and Communication Technologies Authority of Turkey (ICTA) licensed the third private electronic certificate service provider to provide electronic signatures to citizens. [19]
27 January 2007	The Prime Ministry of Turkey published a circular on standardization among the websites of public institutions. This circular defined the common rules to be followed when creating, running and updating the websites of public institutions. [26]
20 March 2007	Ministry of National Education initiated the Education Inservice Teacher Training Program (IEITP). The project was a nationwide project and its main aim was to provide a way for teachers to create, share, update and enhance online educational materials. [27]
3 April 2007	The Prime Ministry of Turkey published a circular revising and enhancing the duties of the e-Transformation Executive Board and the Council of Advisors. Minister of Education and the upper level managers of additional public institutions were added to the Executive Board while the representatives coming from universities, NGOs and different sectors were added to the Council of Advisors to strengthen these structures. This circular also established a new council named the Council of Transformation Leaders. Members of this new council were responsible for the policy-level decisions in their institutions. [28]
4 May 2007	Law on Regulating the Internet Publications and Combating Crimes Committed through such Publications No: 5651 came into force. [29]
4 July 2007	The Prime Ministry of Turkey published a circular to establish a pilot project on electronic citizenship depending on smart cards which have capabilities to carry biometric data inside. [30]

3 May 2008	Ministry of Public Works and Settlement (currently Ministry of Environment and City Planning) initiated the Land Registry and Cadastral Information System Project (TAKBIS) by using the $203 million loan obtained from the World Bank. [31]
14 May 2008	Revenue Administration established under Ministry of Finance published a circular defining and clarifying the legal base related to electronic invoices. The circular abolished the requirement of producing only paper-based invoices by allowing companies to produce electronic invoices signed with a secure electronic signature. [32]
21 May 2008	The Prime Ministry of Turkey published a circular on the Address Record System (ARS) with the aim of connecting the system to the electronic information stored in the Identity Sharing System (ISS). The circular abolished citizens' requirements of submitting paper-based address records to public institutions and obligated all of the public institutions to use the information obtained only from Address Record System without requesting further documentation from the citizens. [33]
10 November 2008	Electronic Communications Law No: 5809 came into force. The law replaced the old laws which were not applicable to recent developments in electronic communications sector. [34]
5 December 2008	The amendment of Public Procurement Law No: 4734 with the Law No: 5812 came into force to provide a way for implementing electronic public procurement. [35]
18 December 2008	Turkish e-Government portal named e-Government Gateway (e-Devlet Kapısı) started to serve Turkish citizens. [36]

| 28 February 2009 | Ministry of Finance reduced the special communication tax rate to 5% in the electronic communications sector. This rate was previously 15% for the fixed communication services while 25% for the mobile ones. [37] |

| 28 February 2009 | An updated and enhanced version of the Interoperability Framework 1.0 named the Interoperability Framework 2.0 was published by the State Planning Organization (currently Ministry of Development). [38] |

| May 2009 | The Supreme Election Council initiated the Computer Aided Central Electoral Register System (SEÇSİS). The system was used in the local government elections of 2009 to connect the database of electors with ID numbers in the Identity Sharing System (ISS) and addresses in the Address Record System. The main aim of the system was to clarify the records of the database of electors and to prevent the possibility of redundant voting. The project was one of the first important projects combining three large scale databases in a fast and an effective way with the help of IT infrastructure. [39] |

| June 2009 | Ministry of National Education enhanced the capability of e-School project by combining ID numbers of children in the Identity Sharing System (ISS) with the addresses of them in the Address Record System (ARS). The ministry used this combined database to enroll each new student to the closest school in terms of distance to his or her house. [40] |

| 30 July 2009 | 3 cellular phone operators authorized by Information and Communication Technologies Authority of Turkey (ICTA) started to provide 3G services in Turkey. [41] |

31 July 2009	Cabinet signed the Directive on Specification of Rules and Procedures on Provision of Public Services. This directive obligated public institutions to share their electronic databases and focused on diminishing bureaucracy by restricting the power of them. According to this directive public institutions were restricted to demand the information and the documents which had already been submitted to other public institutions by citizens for previous applications. [42]
27 October 2009	Ministry of Family and Social Policies initiated the Social Assistance Information System (SOYBİS). The system was performing 28 inquiries over 13 databases in a couple of seconds to decide the eligibility of applicants who had applied for social assistance programs. [43]
19 November 2009	The SMS Information System connected to the National Judiciary Informatics System (UYAP) which enables related parties to receive legal notifications by SMS was awarded with Public Prize in the 4th European e-Government Awards of 2009. [44]
1 April 2010	Ministry of Environment and Forestry (currently Ministry of Environment and City Planning) initiated a pilot project named Online Environmental Permissions Project (e-İzin) letting businesses established in 14 major cities perform bureaucratic processes related to environmental permissions by using a single gateway. [45]
19 April 2010	Ministry of Industry and Trade (currently Ministry of Customs and Trade) initiated a pilot project named Central Legal Entity Information System (MTKBS). The main aim of the system was to provide legal entities the opportunity of online application for trade registries by establishing a central database and by assigning a unique ID to each legal entity. [46]

22 April 2010	Ministry of Industry and Trade (currently Ministry of Customs and Trade) launched Online Consumer Information System (e-Tüketici) allowing consumers to send, follow and get information about their complaints online. [47]
1 May 2010	Turkish Notaries started to use the Vehicle and Driver Information System (ASBİS) to approve the sales and to complete the registration processes of motor vehicles. [48]
11 May 2010	Ministry of Family and Social Policies updated the Social Assistance Information System (SOYBİS) by adding the capability of sharing its database not only with central public institutions but also with local public institutions and NGOs. The new project was named as Integrated Social Assistance Services (BÜSYAP). It was updated again in the beginning of June 2010 and connected to green card health system designed to assist citizens not having health insurances. [49]
1 June 2010	Ministry of Internal Affairs and Ministry of Foreign Affairs initiated the e-Passport System which provided an opportunity to apply for the new type of e-Passports by using a single gateway. These new type of passports contain electronic and biometric data about citizens. [50]
12 September 2010	Article 20 of the Turkish Constitution was updated after the referendum giving consent to this change with a ratio of 57.88%. The update provided citizens the right to request the protection of their personal data, the right to access this data easily and the right to be informed when this data was used by government authorities. [51]
10 November 2010	Turkey signed the Convention on Cybercrime prepared by Council of Europe to combat cybercrimes in the international context with the coordination of other countries. [52]

22 November 2010	Movement on Increasing Opportunities and Developing Technology (F@TİH) was initiated by Ministry of Transport (currently Ministry of Transport, Maritime Affairs and Communications) and Ministry of National Education. The ultimate aim of the project was to renew more than 600,000 classrooms with latest technological equipment in addition to distributing tablets to students. The project focused on increasing connectivity, updating curriculums and providing better training opportunities to teachers by connecting them over a single platform in three years with a budget of nearly 1.5 billion dollars. [53]
8 December 2010	The Prime Ministry of Turkey published a circular on Transition Plan for IPv6 in e-Government services. According to circular all online public services should be provided over platforms supporting IPv6 until the end of August 2011. [54]
6 February 2011	The State Planning Organization (currently Ministry of Development) published a report evaluating the probable problem sources and solutions about sharing and re-using public information by referencing the needs and strategies stated in the National Information Society Strategy of Turkey for the period between 2006 and 2010. [55]
7 March 2011	Hacettepe University which was a public university used the e-Procurement System (EKAP) for the first time to open a public tender for the medical supplies needed in its university hospital. [56]
15 April 2011	The State Planning Organization (currently Ministry of Development) initiated a pilot project named e-Correspondence Project (e-Yazışma) as a follow up of the Interoperability Framework 2.0. The project's focus was to define the standards and security protocols applied on electronic documents circulating between public institutions. [57]

14 October 2011	The State Planning Organization (currently Ministry of Development) completed initial phase of the e-Correspondence project. This initial phase focused on developing standards for sending and receiving electronic documents between public institutions. [57]
1 November 2011	Responsibility of coordinating and organizing all of the e-Government related tasks was transferred to Ministry of Transport, Maritime Affairs and Communications. [58]

This chronology contains the most significant developments between 2003 and 2011 and there are many other local and national e-Government projects which are not shown in it. Figure 1 shows yearly investments of the Turkish Government for all of these e-Government projects between 2002 and 2011. The trend line in the figure clearly indicates that these investments have increased roughly 300% in a ten year period and they are still continuing to increase.
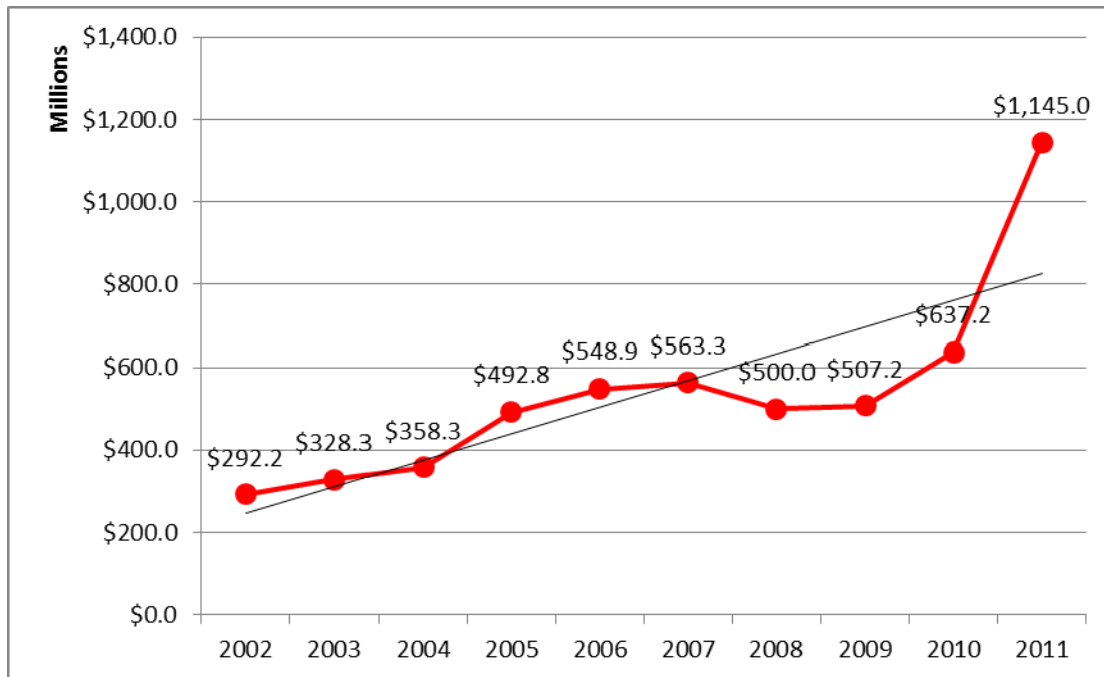

Figure 1: Yearly Investments of the Turkish Government for the e-Government Projects between 2002 and 2011 (Source: State Planning Organization, Information Society Statistics Report, 2011)[2]

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[2] The original amounts were in Turkish Liras (T.L.) and converted to $U.S. by taking the exchange rate as $1 = 1.8 T.L.

The main reason of presenting this chronology and Figure 1 is to prepare a base for the following discussions, not covering all of the e-Government initiatives occurring in Turkey. They are sufficient to easily understand that there are a lot of efforts to overcome the problems which arise in the e-Government transformation process. Many circulars were published by the Prime Ministry to solve the potential coordination problems; new governmental structures like boards were established focusing on the subject; strategic plans and action plans were prepared; some of the legal base was adapted to the e-Government approach; some integration was established between different public institutions on the concept of interoperability and lots of money was spent in an increasing manner each year starting from 2003 until 2011. Figure 2 shows the distribution of the funds between different types of the e-Government projects for the year 2011. The figure clearly indicates that Turkey focuses on implementing an e-Government approach especially in education sector which will be the probable pioneer ahead of other sectors.
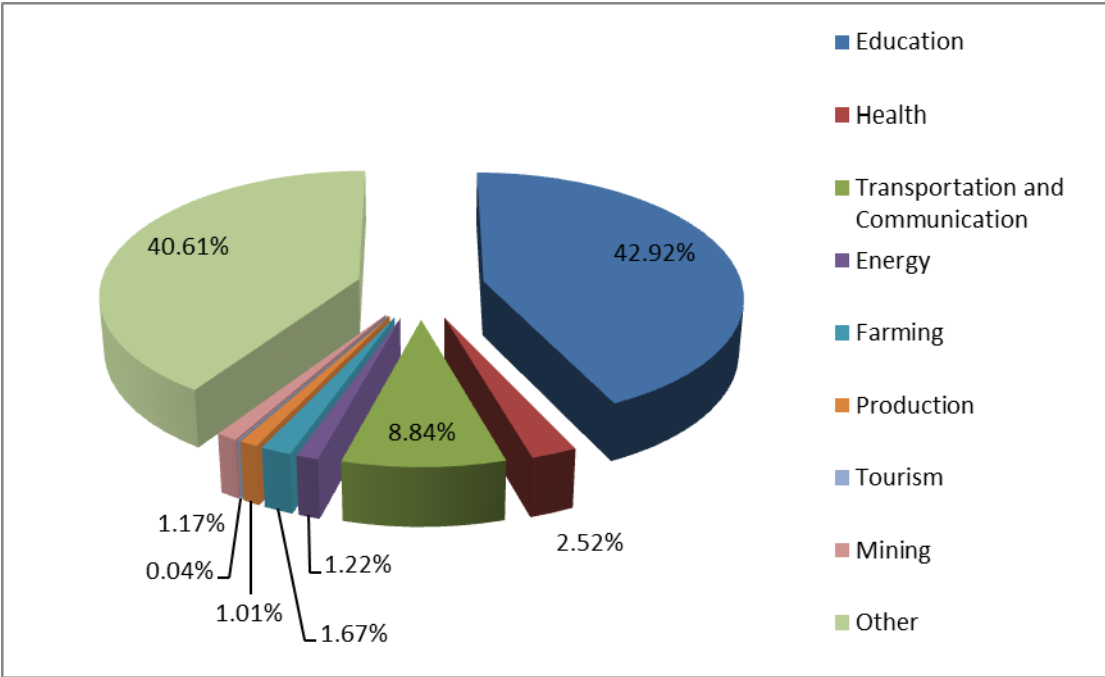

Figure 2: The Distribution of the Funds between Different Types of the e-Government Projects in 2011 (Source: State Planning Organization, Information Society Statistics Report, 2011)

Any reader inspecting the chronology and the figures above might think that Turkish Government did and is still doing a lot of things to integrate e-Government notion to its public institutions. However the question we are trying to answer is not related to number of these efforts, it is rather related to total efficiency of them. In other words, we will not discuss whether these efforts are enough or not because the chronology clearly shows that they are enough, in fact more than needed. What we will discuss is whether these efforts are successful or not. We will investigate the level of success by using local and international data in the two consequent chapters and combine our findings with the findings of other studies in the chapter following these two chapters.

3. EVALUATION OF SUCCESS LEVEL BY USING LOCAL DATA

3.1 Success at First Glance

The chronology we had presented in the previous chapter contains over 50 projects some of which were completed, some which were abandoned and some of which are still continuing. One of the most important success indicators we can get from this chronology before assessing the detailed data we gathered from local sources is the fact that more than half of these projects experienced significant changes at least in one of the four categories which are scope, function, integration and related institution. Consider the project of developing the Turkish e-Government Portal. When the responsibility of developing the Turkish e-Government Portal was given to Turkish Telecom, the company was the state-owned incumbent fixed line telephone operator of Turkey having a department acting as an internet service provider. [59] However there were two important clear decisions about the company. One of them was privatization and the other was structurally separating the internet service provider department as a totally different company after privatization because of the antitrust laws. [59] Although these two decisions were on the agenda of the government with clear dates, the job assigned to the company without evaluating the probable consequences. When the company was privatized and its internet division was separated because of the agenda, the responsibility was transferred to TurkSAT. However a similar mistake made again because TurkSAT is a state-

owned satellite operator which is responsible for the satellites and cable network of Turkey. [60] Although it has a subdivision named UyduNet [60] acting as an internet service provider, the responsibility of running the Turkish e-Government Portal is not fitting to the job definition of company. The portal is still operated by TurkSAT, however it is not clear that the company will be able to meet the accelerating demand originating from increasing e-Government services in the future. Even if it seems successful currently, the future of the portal is unclear because of the fact that managing the portal becomes more complex when e-Government projects are integrated with each other.

While the Turkish e-Government Portal is a good example for changes in a related organization, the Social Assistance Information System is a good one for changes in function. The initial version of system was designed to be used only internally by Ministry of Family and Social Policies to decide the eligibility of applicants who had applied for social assistance programs. [43] New version transformed to the Integrated Social Assistance Services System started to be used by external entities like local public institutions and NGOs. [49] From the technical capabilities, the new system seems more successful but this success was achieved before the critical update in Article 20 of the Turkish Constitution providing citizens the right to request the protection of their personal data. So even it is technically successful in protecting personal privacy issue, it is impossible to say whether it is legally successful in doing the same thing as it shares personal data with NGOs.

We can present many other examples about the changes in the scope, function, integration and related institution. However there is another interesting situation depending on a broader perspective. It is the fact that general responsibility of coordinating the e-Government transformation also experienced a significant change three times. This coordination job was initially under the custody of one deputy prime minister. At the second step it was transferred to the State Planning Organization and it is currently under the custody of the Ministry of Transport, Maritime and Communications. In addition to this the Turkish governmental system also experienced radical changes. The State Planning Organization was abolished and integrated to a new ministry named Ministry of Development while Ministry of Transport

became Ministry of Transport, Maritime and Communications. It is true that governments are re-organized from time to time to respond the needs of the society and new institutions are formed while some older ones are abolished but this does not change the fact that even in this type of a necessity the responsibility of a long term strategy like e-Government transformation should not travel between three completely different entities.

3.2 Detailed Success Indicators

While case by case examples like the situation of the Turkish e-Government Portal or general evaluations like the transfer of responsibility between institutions are good indicators for evaluating the success level at first glance, it is important to present some detailed information to complete our analyses from the local perspective. One of the most important sources we will use is the Information Society Statistics prepared by the Turkish Statistical Institute (TurkStat). TurkStat is a public institution preparing country-wide statistics related to many areas including demographics, economy, workforce, tourism, etc. since 1926. [61] The institution has been preparing the information society statistics for the households and the legal entities since 2005 and these statistics contain valuable information which will be helpful to evaluate the success level of the e-Government transformation. The figure below is formed by using the data obtained from TurkStat. It shows percentages of the households and the legal entities using the e-Government services in Turkey between 2007 and 2010.
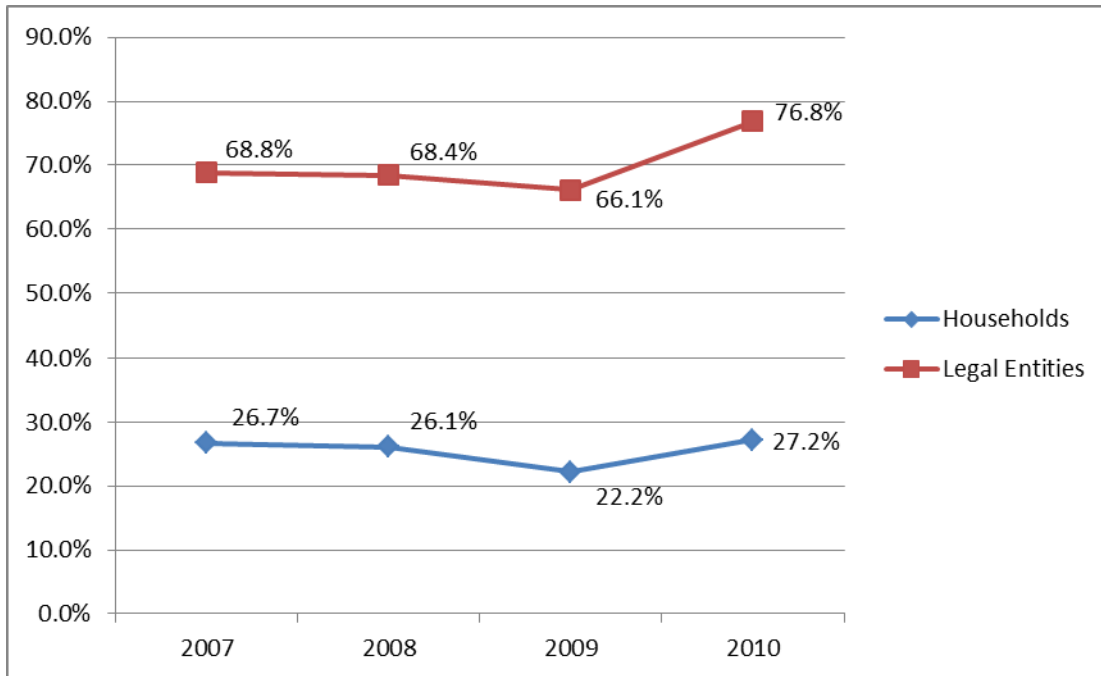
Figure 3: The Percentages of the Households and the Legal Entities Using the e-Government Services in Turkey (Source: TurkStat)[3]

Figure 3 clearly shows that there is a decreasing trend in the percentages of using the e-Government services until the end of 2009. The situation is not so severe for the legal entities as the decreases experienced by them are relatively low and compensated with a great increase in 2010 but it is really severe for the households as the percentage of the households using the e-Government Services could barely pass the average of 2007 at the end of 2010 after suffering nearly 4% decrease in 2009. Interestingly the most important developments like launching the Turkish e-Government Gateway, enacting the new Electronic Communications Law or publishing circulars about public website standardization and interoperability issues were all completed in this period. The situation becomes more interesting for the households when the percentages of the households and the legal entities having internet access in Turkey are analyzed for the same period. The figure below is formed again by using the statistical data of 2007-2010 to show these percentages for the households and the legal entities.

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[3] The figure is prepared by merging the data obtained from the statistics of 2007, 2008, 2009 and 2010. The percentages used for the legal entities are yearly averages. The percentages of 2007, 2008 and 2009 used for the households are the averages of the last three months of these years since there is no yearly average provided by TurkStat. The percentage of 2010 used for the households is the average of the year.
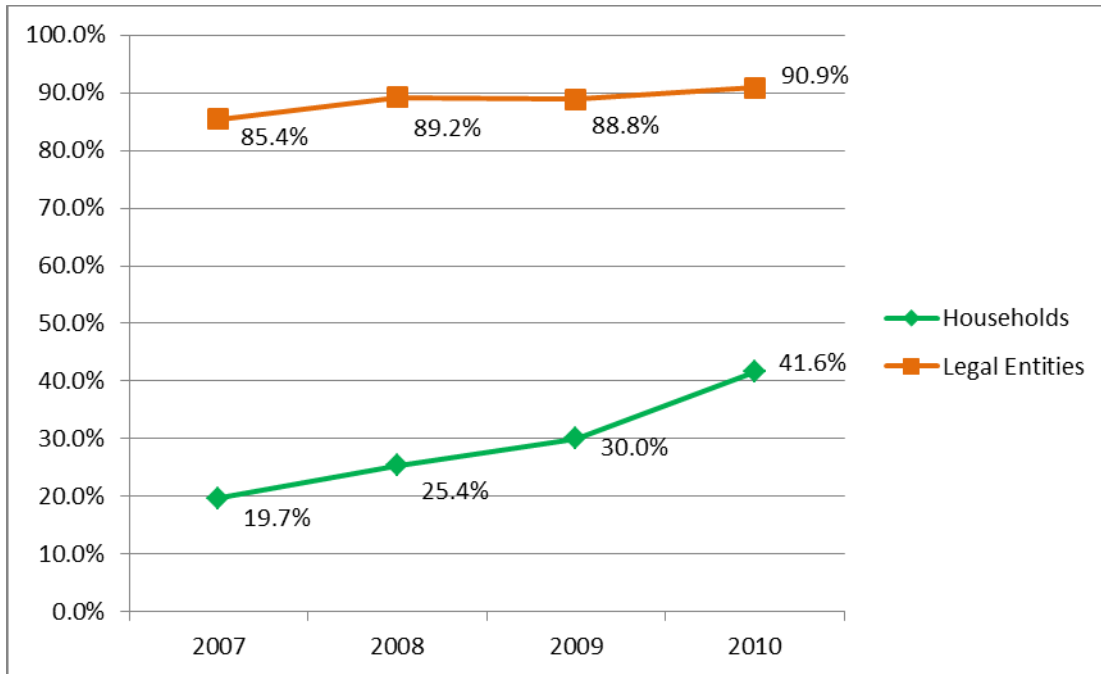
Figure 4: The Percentages of the Households and the Legal Entities Having Internet Access in Turkey (Source: TurkStat)[4]

Figure 4 indicates that the percentage of households having internet access nearly doubled from 2007 to 2010. Any reader interpreting the results of Figure 3 with Figure 4 can easily conclude that even though the accessibility of the e-Government services increased by a factor of two in four years, the usage ratio of them remained same for the households. To validate this information, we have to look other statistics. If usage ratios of other similar activities also decreased in this period, we can clearly say that there was a general trend effecting society and we cannot associate decreasing percentages in e-Government usage with decreasing success level in transformation efforts, but if the opposite was true than it becomes obvious that people experienced problems with the e-Government services provided by public institutions and these problems seem to increase despite the increasing accessibility and developing technology. As e-Commerce and e-Government services are similar because of the fact that they both include reciprocal official communication between the providing party and the receiving party, the percentages of the households using the e-commerce services in the same

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[4] The figure is prepared by merging the data obtained from the statistics of 2007, 2008, 2009 and 2010.

period might be a good indicator which can be used for this purpose. Figure 5 shows the percentages of the households using the e-commerce services between 2007 and 2010.
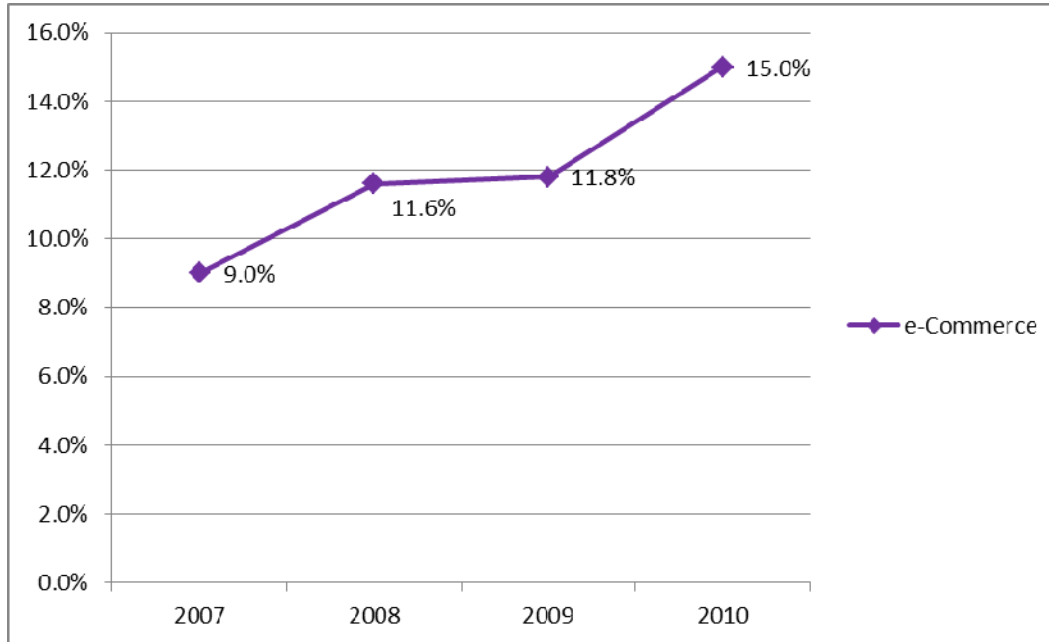
Figure 5: The Percentages of the Households Using the e-Commerce Services in Turkey
(Source: TurkStat)[5]

Figure 5 validates that the problem is not a general one; it's rather a specific one which only affects the e-Government services in Turkey. Fortunately this problem was also noticed by the State Planning Organization. The agency provides a figure trying to explain the households' main reasons of not using the e-Government services in its Information Society Statistics Report 2011. Figure 6 is reproduced from this figure. The original report references the data used to form the figure to TurkStat. However the same data is not provided directly to public by TurkStat. So, it is better to reference Figure 6 to the report of the State Planning Organization instead of TurkStat considering the possibility of merged data.

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[5] The figure is prepared by merging the data obtained from the statistics of 2007, 2008, 2009 and 2010.
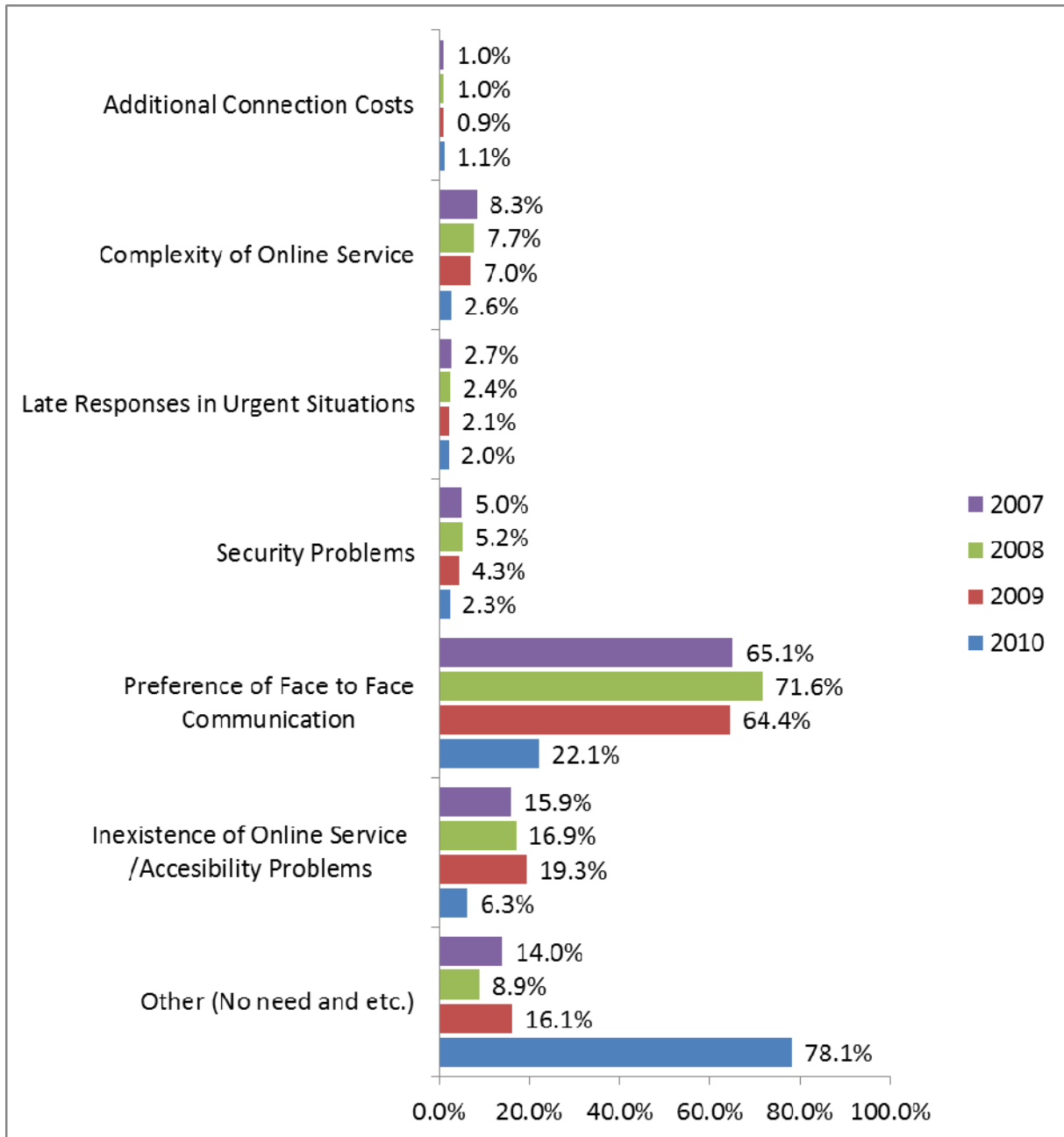
Figure 6: Households' Reasons of Not Using the e-Government Services
(Source: State Planning Organization, Information Society Statistics Report, 2011)

The figure contains seven reasons of not using the e-Government services and according to it, the ratios of six out of seven reasons generally decreased in the period between 2007 and 2010 while the ratio of the seventh reason made a jump in 2010 from 6.3% to 78.1%. The interesting thing about the seventh reason is the fact that it is not a clear reason. It is the aggregate total of all other reasons that were not counted in the main study categorized under a general heading

named "Other". The report only contains the phrase "No need and etc." as an example to these uncounted reasons. However it is obvious from the previous analyses that the problems located under this category are the main reasons creating the decreasing trend in the percentages of using e-Government services in Turkey in 2010. In fact, the phrase given as an example has an interesting meaning. If the main reason of not using the e-Government services is related to not needing them then there is only one possible scenario. According to this scenario normal government services should be working better than the e-Government services so that citizens do not need the e-Government services. If we return to the definition of the e-Government we presented in the beginning of this study, the probability of achieving a better system currently without the tools and opportunities provided by the e-Government is very low because of the definition of the e-Government which is "*the use of information technologies (IT) and, in particular, the internet, to deliver government information and services and to involve citizens in the democratic process and real-time government decision making in a much more convenient, customer-oriented (citizen-centric), cost-effective and potentially altogether different and better way.*" [1]

The interpretation of this figure leads us to the fact that either there is a dilemma or a misrepresented example here. As the Turkish Government has been trying to realize the e-Government transformation for many years with many projects and as it still continues to invest in the area to accelerate the e-transformation, we believe that the probability of having a misrepresented example here is much bigger when compared to having a dilemma. So we should search the real reasons of not using the e-Government services by using the data in hand instead of attributing it to a general reason named as "No need". The reasons of this situation are explored under the chapter named "Identified Problems" in this study but before passing to that chapter, it is better to evaluate the situation from an international perspective by using the international studies and benchmarks in the following chapter so that we can cover the total set of problems without missing any important information.

4. EVALUATION OF SUCCESS LEVEL BY USING INTERNATIONAL DATA

4.1 Success at First Glance

Similar to all other e-concepts, successful implementation of an e-Government transformation is also connected to the main indicators of information society. For instance, if the citizens of a country have so limited internet access either because of technical, economic, legal or educational reasons, the efforts of implementing an e-Government transformation become meaningless as the most common way of reaching e-government services is using the internet. As a result of this, we have to present the information society indicators related to Turkey and compare these indicators with those of other countries to evaluate the success of the e-Government at first glance in an international context. To do this, we should first define which indicators we will use. A good approach is using the most frequent indicators we had seen in the local and the international studies focusing on the information society issue. These indicators are the ratio of people using internet and the ratio of broadband internet penetration. The other thing we should decide is the countries we will compare with Turkey. The studies we analyzed generally present the United States (US) and the countries which are members of the European Union (EU27) as successful examples in realization of the information society. So comparing the ratios of Turkey with those of the US and averages of the EU27 is a good point to start. Figure 7 is presenting this information for 2010 and it shows that Turkey is on the half way while implementing the information society when compared to the US and the EU27. As Turkey is not as developed as these countries in the concept of the information society, it is natural to expect efficiency problems in the e-government transformation efforts even these efforts are maximum. This is because of the fact that level of accessibility presented by the information society indicators puts a relative upper limit to the e-Government transformation efforts in Turkey.
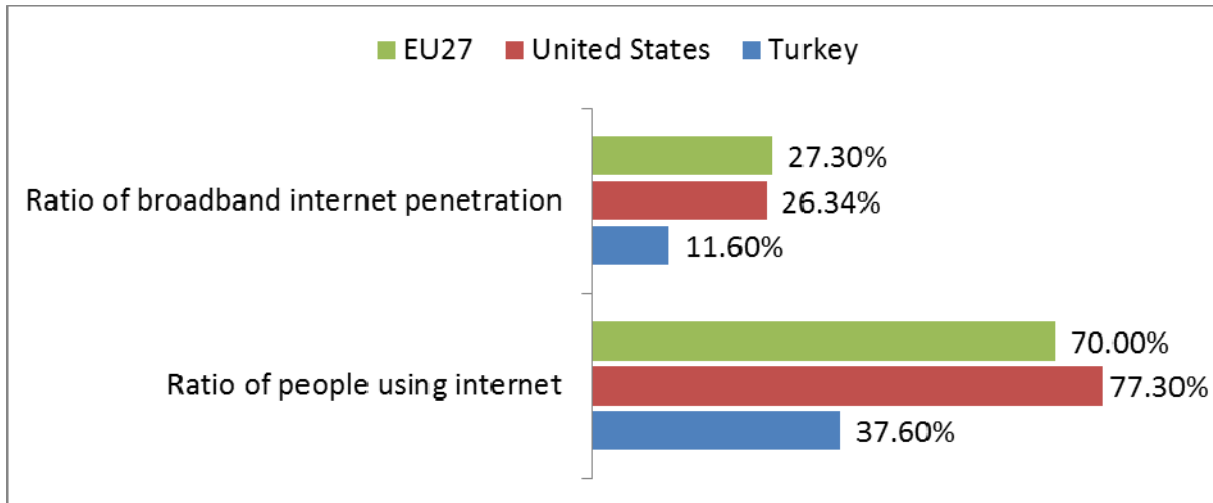
Figure 7: The Comparison of Turkey with the US and the EU27
(Source: International Telecommunications Union (ITU), EuroStat and TurkStat)[6]

Keeping this upper limit in our minds, analyzing a professional benchmark study prepared by an international organization will be helpful to validate the position of Turkey in realizing the information society. As international benchmark studies provide a way to compare and contrast the situation of the analyzed country with those of other countries in addition to world averages, they are really valuable resources for the researchers. One of these studies we will use in this step is the Global Information Technology Report prepared by the World Economic Forum. In fact, we will use the four different versions of this report which cover the periods of 2007-2008, 2008-2009, 2009-2010 and 2010-2011 to keep our analyses consistent with analyses we had done in Chapter 3. The Global Information Technology Reports contain Network Readiness Index Rankings calculated for each country. The calculation is done by considering the technical infrastructure, provided services, development opportunities, legal base and human capital of the analyzed country. [62] Although these rankings are not specific to the success of the e-Government transformation, they are really good indicators of the subject because of the fact that they are calculating a single score containing everything related to electronic communications in a country to form an index showing the success level of that country. The table below is prepared by using the data taken from the last four reports.

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[6] The ratios of the US are taken from ITU and the ratios of the EU27 are taken from EuroStat.

2007 – 2008			2008 - 2009		
Country	Ranking	Score	Country	Ranking	Score
Denmark	1	5.78	Denmark	1	5.85
Sweden	2	5.72	Sweden	2	5.84
Switzerland	3	5.53	USA	3	5.68
USA	4	5.49	Singapore	4	5.67
Singapore	5	5.49	Switzerland	5	5.58
...			...		
Turkey	**55**	**3,96**	**Turkey**	**61**	**3,91**
2009 - 2010			**2010 - 2011**		
Country	Ranking	Score	Country	Ranking	Score
Sweden	1	5.65	Sweden	1	5.60
Singapore	2	5.64	Singapore	2	5.59
Denmark	3	5.54	Finland	3	5.43
Switzerland	4	5.48	Switzerland	4	5.33
USA	5	5.46	USA	5	5.33
...			...		
Turkey	**69**	**3,68**	**Turkey**	**71**	**3,79**

Table 1: Turkey's Four Year Network Readiness Index Rankings and Scores
(Source: World Economic Forum, Global Information Technology Reports of 2007-2011)

Table 1 indicates that the situation of Turkey is not so bright when compared to leaders. The country is going back each year in the rankings. In addition to that, the scores of the first three years are showing a decreasing trend while the last year's score shows a slight increase that is not even matching those of the first two years. Scores in this table giving information about a broader scope seem consistent with Figure 2 showing the percentages of the households and the legal entities using the e-Government services in Chapter 3.

4.2 Detailed Success Indicators

While Network Readiness Indexes presented in the Global Information Technology Reports form a good point to start, we should analyze other international studies solely focusing on the e-Government issue to validate our initial assessments about the success level. Another study we will use at this point is United Nations e-Government Survey. This study has many versions but we will use the most recent three versions, first of which was conducted in 2008 and the

remaining two were conducted in 2010 and 2012 respectively. Consistent with our aim, this study solely focuses on the e-Government development levels of the countries. The rankings calculated are formed by evaluating whether the citizens of analyzed country are benefiting from more advanced e-service delivery, having better access to information, enjoying more efficient government management and realizing improved interactions with government. [63]

Turkey is in the Western Asia group in this study which contains 17 countries. The 2012 version of this survey includes comparisons of the scores and rankings of 2012 with those of 2010. The 2010 version contains the same comparisons with 2008 version. Table 2 and Table 3 below are formed by merging the data taken from these three versions.

Country	e-Government Development Index Values		
	2008	2010	2012
Bahrain	0.5723	0.7363	0.6946
Israel	0.7393	0.6552	0.8100
Cyprus	0.6019	0.5705	0.6508
United Arab Emirates	0.6301	0.5349	0.7344
Kuwait	0.5202	0.5290	0.5960
Jordan	0.5480	0.5278	0.4884
Saudi Arabia	0.4935	0.5142	0.6658
Qatar	0.5314	0.4928	0.6405
Turkey	*0.4834*	*0.4780*	*0.5281*
Oman	0.4691	0.4576	0.5944
Azerbaijan	0.4609	0.4571	0.4984
Lebanon	0.4840	0.4388	0.5139
Georgia	0.4598	0.4248	0.5563
Armenia	0.4182	0.4025	0.4997
Syrian Arab Republic	0.3614	0.3103	0.3705
Iraq	0.2690	0.2996	0.3409
Yemen	0.2142	0.2154	0.2472
Sub-regional average	**0.4857**	**0.4732**	**0.5547**
World average	**0.4514**	**0.4406**	**0.4882**

Table 2: Turkey's e-Government Development Scores in 2008, 2010 and 2012
(Source: UNPAN, United Nations e-Government Survey of 2008, 2010 and 2012)

Country	World e-Government Development Rankings		
	2008	2010	2012
Bahrain	42	13	36
Israel	17	26	16
Cyprus	35	42	45
United Arab Emirates	32	49	28
Kuwait	57	50	63
Jordan	50	51	98
Saudi Arabia	70	58	41
Qatar	53	62	48
Turkey	*76*	*69*	*80*
Oman	84	82	64
Azerbaijan	89	83	96
Lebanon	74	93	87
Georgia	90	100	72
Armenia	103	110	94
Syrian Arab Republic	119	133	128
Iraq	151	136	137
Yemen	164	164	167

Table 3: Turkey's e-Government Development Rankings in 2008, 2010 and 2012
(Source: UNPAN, United Nations e-Government Survey of 2008, 2010 and 2012)

e-Government Development Index Values presented in Table 2 are consistent with our previous findings. The score of Turkey decreases in the first period between 2008 and 2010 and then increases in the second period between 2010 and 2012. This table also gives another important clue about the current trend as it contains data of 2012 in addition to data of 2008-2011 period. This clue indicates that the awareness level of the administration about the success problem increases rapidly in 2012 and the score of 2012 which is significantly higher than 2008 shows the consequences of this increase clearly. If we remember the final development in the chronology which stated that responsibility of coordinating and organizing all e-Government related tasks had been transferred to the Ministry of Transport, Maritime Affairs and Communications on November 2011, [58] we can conclude that the new authority is more aware of the situation and tries to solve the problems as fast as possible to increase the efficiency of the e-Government transformation. However when we evaluate sub-regional and

world averages together with Table 3, we notice that it is too early to be optimistic. Although both of the averages experience slight decreases in 2010, they show an increasing trend between 2008 and 2012. This situation might be attributed to increasing capacity and developing technology. So if all the countries in the world are advancing in the e-Government transformation and if the sub-regional average of the Western Asian countries is increasing more than then that of Turkey, it becomes hard to associate the increase in Turkey's score solely with its performance. Table 3 is supporting this view as it shows the world rank of countries. Currently Turkey's rank is even worse than its initial rank in 2008. This shows that the number of problems is increasing even though the problems are currently being solved more efficiently when compared to the past. Another interesting information we obtained from this study is the fact that top five countries increased their scores between 2010 and 2012 parallel to increase in the score of Turkey and all of them except Canada kept their positions in the top five list having scores nearly twice the value of Turkey's score both in 2010 and 2012. This information which is presented in Table 4 and Table 5 respectively also supports our view about not associating the increase in Turkey's score solely with its performance.

Rank	Country	E-government Development Index Value
1	Republic of Korea	0.8785
2	United States	0.8510
3	Canada	0.8448
4	United Kingdom	0.8147
5	Netherlands	0.8097
….	….	….
….	….	….
69	*Turkey*	*0.4780*

Table 4: e-Government Development Scores of the Top Five Countries in 2010
(Source: UNPAN, United Nations e-Government Survey of 2010)

Rank	Country	E-government Development Index Value
1	Republic of Korea	0.9283
2	Netherlands	0.9125
3	United Kingdom	0.8960
4	Denmark	0.8889

5	United States	0.8687
….	….	….
….	….	….
80	***Turkey***	***0.5547***

Table 5: e-Government Development Scores of the Top Five Countries in 2012
(Source: UNPAN, United Nations e-Government Survey of 2012)

Rank	Country	E-government Development Index Value
1	Austria	0.7840
2	Iceland	0.7835
3	Spain	0.7770
4	Belgium	0.7718
5	Slovenia	0.7492
6	Monaco	0.7468
7	Russian Federation	0.7345
8	United Arab Emirates	0.7344
9	Lithuania	0.7333
10	Croatia	0.7328
11	Hungary	0.7201
12	Italy	0.7190
13	Portugal	0.7165
14	Ireland	0.7149
15	Malta	0.7131
16	Bahrain	0.6946
17	Greece	0.6872
18	Kazakhstan	0.6844
19	Chile	0.6769
20	Malaysia	0.6703
21	Saudi Arabia	0.6658
22	Latvia	0.6604
23	Colombia	0.6572
24	Barbados	0.6566
25	Cyprus	0.6508
	Average	**0.7492**

Table 6: The Scores of Emerging Leaders of e-Government Development in 2012
(Source: UNPAN, United Nations e-Government Survey of 2012)

The study also contains a list of the emerging leaders of the e-Government transformation. Table 6 which presents this list indicates that Turkey is even far behind these emerging leaders group. To further enhance our analyses, the final studies we will analyze are the ones prepared by the European Union (EU) as Turkey is a candidate for union membership and as it is trying to harmonize its laws and governmental processes with those of the European states. The most recent and famous study is the 9th Benchmark Measurement published by European Commission, Directorate General for Information Society and Media in December 2010. The study is prepared by Capgemini, IDC, Rand Europe, Sogeti and DTi and named as "Digitizing Public Services in Europe". [64] It contains benchmarking analyses for 32 countries named EU27+[7]. Benchmarking analyses are performed on five major areas. These areas, their indicators and their scales are presented in the table below.

Benchmarking Area	Indicator(s)	Scale
20 basic e-Government services	• Full online availability of 20 basic e-Government services • Sophistication level of 20 basic e-Government services	1-100
User experience on 20 basic e-Government services	• Level of average user experience on all services • Level of average user experience on national portal	1-100
e-Procurement	• e-Procurement availability for the pre-award phase • Level of e-Procurement visibility	1-100
Life events	• Maturity level of business life events (Starting up a business is used as an example) • Maturity level of citizen life events (Losing and finding a job is used as an example)	1-100
Availability and use of key enablers	• Number of key enablers including organizational and technical frameworks	N/A

Table 7: Benchmarking Areas, Indicators and Scales
(Source: European Commission, Digitizing Public Services in Europe, 2010)[8]

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[7] EU27+ group contains 27 member states plus Turkey, Norway, Switzerland, Croatia and Iceland.
[8] The original study does not have a table. The information presented in the original study was used to form a condensed table summarizing Benchmarking Areas, Indicators and Scales

The EU27+ averages of each area are presented with the scores of Turkey in the following figure
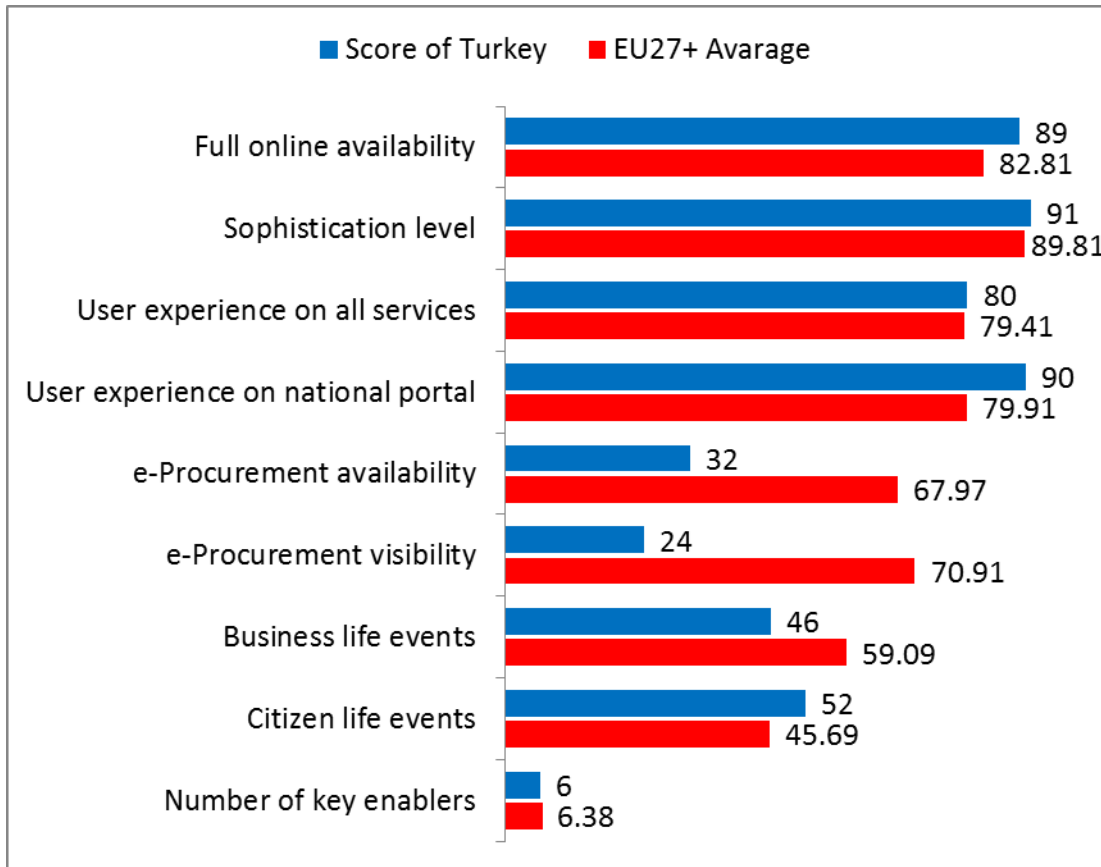

Figure 8: The EU27+ Averages and the Scores of Turkey
(Source: European Commission, Digitizing Public Services in Europe, 2010)[9]

This figure is again consistent with our previous findings. Turkey has better scores than the EU27+ in full online availability, sophistication and user experiences of basic 20 e-Government services in addition to user experiences on its national portal. These results are good indicators of the fact that the administration is trying to adapt e-Government services to the governmental procedures with a great effort. However when these results are evaluated with those of the following four areas, it is clearly seen that the efficiency of them is not so high. In other words they are not as successful as expected. Consider the situation of e-Procurement. Although the amendment of Public Procurement Law No: 4734 with the Law No: 5812 came

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[9] The original study does not have a figure. The information presented in the original study was used to form the figure comparing EU27+ Averages and the Scores of Turkey.

into force on 5 December 2008 to provide a way for implementing electronic public procurement, [35] the concept of e-Procurement is not working effectively as it can be understood from the scores which are nearly one third of the averages. In addition to this, the score of business life events is lower than the average of EU27+ while that of citizen life events is higher. It is a good thing for Turkey to have a better score at least in one of the indicators of life events even though both scores of this area are so low when compared to the top scores which are 100 and 100 in these categories. The low averages in these categories are showing that not only Turkey but also most of the other European Countries are suffering from the similar problems in the area of life events. The final indicator showing the number of key enablers is also lower than the avarage of EU27+. In our previous discussions we stated that the number of problems is increasing even though the problems are currently being solved more efficiently when compared to past. One of the main reasons of this might be related to not providing sufficient key enablers as this category contains organizational and technical frameworks utilized in countries.

5. IDENTIFIED PROBLEMS

5.1 Problems Identified by Using Analyses Made on Local and International Data

When we analyze the success level of e-Government transformation by using local and international data, we clearly see that there is positive trend to realize the transformation in public institutions but the efficiency of this transformation is very low, in fact it is decreasing day by day. The most important question to be asked at this point is what the reasons of this efficiency decrease are. The answers of this question can be found in the chronology which shows developments between 2003 and 2011. This chronology shows us that there are not any clearly defined procedures to complete the transformation in the long term. The administration publishes some strategic plans or action plans and it establishes boards or institutions to perform the coordination but the focus of all of these studies are concentrated on the short or medium term. As the studies are short or medium term studies, their contents or structures are frequently changed and most of the achievements become stand-alone ones instead of being

the result of a coordinated effort. In addition to this, when analyzed deeply, it is seen that these short or medium term studies generally focus on the question of what to do instead of how to do it. In other words they only give responsibilities to public institutions to perform predefined goals but they do not contain a way of achieving these goals in a unified manner which considers procedures, rules, standards, interoperability requirements or human perceptions. This is because of the lack of a predefined custom strategy for public institutions which contains every aspect of e-Government transformation including technical, social, legal and economic aspects of the subject. To establish a base for the solutions of these problems, it is very important to define the current facts and the problems related to these facts. The facts and the related problems are explained in the list below.

- Fact 1: The e-Government transformation process of Turkey is not performed efficiently.
- Related Problems:
    o There is no long term strong and consistent strategy associated with effectively realizing the e-Government transformation.
    o Transformation plans focus on the short or medium term. There are not any long term plans at the governmental level. Time limits, due dates, planned milestones and desired outputs are not clearly defined. Reward and punishment mechanisms are absent.
    o Institutions create their own way of transformation instead of a unified approach. They differ from each other in the level of transformation and establishing a common base at the governmental level becomes harder.
    o The administration associates the problems related to the e-Government transformation to wrong reasons. This decreases the speed of finding proper and efficient solutions to these problems.
    o The number of problems related to the e-Government transformation is increasing at a rate that's higher than the rate of solutions. The number of organizational and technical frameworks utilized is lower than needed.
    o The awareness level of the administration about the problems related to the e-Government transformation is still low even though it continues to increase.

- Fact 2: The e-Government transformation process in the country does not clearly cover all dimensions of the subject.
- Related Problems:
  - The social dimension is only partially considered. There are not any significant projects to increase the computer literacy or the awareness of people except the ones focusing on students. Current adult users do not reach educational resources on using information technologies better. Projects trying to solve the problems related to human perception or resistance to change are also absent.
  - The legal dimension is only partially considered. Attempts are made to adapt the laws and the regulations to the e-world without a unified approach. As a result of this, multiple changes happen on the same laws and regulations at different times, which create conflicts between them.
  - The economic dimension is not considered. There are no clear studies showing the total costs, benefits and returns on investment associated with the e-Government transformation. There are only project based calculations for some specific projects.
  - The security and risk dimension is not considered. Probable risks associated with the e-world are not clarified. Interoperable security protocols designed to eliminate the probable risks are not widespread in the e-Government projects. Emergency or backup plans are not prepared.
  - The tool dimension is only partially considered. The tools which are inseparable parts of the e-Government transformation like the e-Government Gateway or the e-Signature are not marketed or used effectively.
  - The interoperability dimension is only partially considered. Rules, standards and requirements are frequently changed.

In summary we identified some of the problems related to the e-Government transformation by using our previous analyses. But we should also evaluate the other problems stated in the other studies to obtain a final set before proposing solutions to these problems. Our next heading is focusing on this issue.

5.2 Problems Stated in Other Studies

While performing our literature search about the e-Government transformation in Turkey for this master's thesis, we came up with many other problems identified by other studies focusing on the different dimensions of the e-Government subject. Some of these problems are stated in multiple studies and this requires that they should be added to the problem set which contains the reasons of low level of success in Turkish e-Government transformation. As a rule of thumb we did not add any problem to the list if the problem is not stated in at least three different studies none of which was referencing the remaining ones. By applying this methodology we identified four new common problems that were not in our initial list.

The first problem originates from the lack of political leadership. Although there are many projects which are tried to be realized by combined efforts of different public institutions, the people politically representing these institutions in administration do not have a unified political view. These different views weaken the possibility of forming a country-wide support for realizing the e-Government transformation effectively. İdikat discusses the importance of political leadership in her study and evaluates the level of political leadership in the e-Government transformation of Turkey as 3 in a 5 level scale. [65] Aydın is more pessimistic about the issue and supports his view with the example of MERNIS project that unnecessarily waited so long time before implemented. [66] Soykan argues that one of the most important problems to be solved for an effective e-Government transformation is increasing the political support of leaders for the transformation strategies [67] while Baştan And Gökbunar emphasize that it is not possible to initiate the e-Government transformation without a strong political leadership. [68]

The second problem is the lack of managerial commitment. Differently from political leadership, this problem is experienced at the institutional level. As the practical implementers of the e-Government transformation plans, upper level managers are the second most important category for an effective transformation after political leaders. Although most of the managers in public institutions generally seem committed themselves to the transformation

efforts well, a study made by Şeker and Şeker shows that this commitment originates from government's obligations not from the ability of visionary managers following recent technological developments. [69] Demirel states that quality and commitment of organizational management are key factors in realizing the e-government [70] while Uçkan states that higher level management is the leading group in the e-Government transformation, who will explain the benefits of e-Government transformation to society. [71]

The third problem is the lack of institutional support. This problem originates from the workers of public institutions and has two main reasons. One of them is the fact that most of the public institutions do not have a strong team to implement e-Government services. Although e-Government services are mostly provided by outsourcing the job to private firms, institutions also need a team with sufficient technical background acting as an intermediary between the providing firm and the institution. Efe and Yıldız found that 58% of the public institutions in one of the rural cities of Turkey do not have a team with sufficient technical background. [72] Naralan argues that central public institutions in developed cities have better opportunities but thinks in parallel with Efe and Yıldız for the rural areas. [73] The other problem is the fact that workers recognize e-Government transformation as a burden instead of a new way of doing business which increases efficiency and effectiveness so instead of changing the way of doing business by the e-Government approach, the e-Government approach is tried to be patched over the existing business processes. Aykın states that the solution of this problem is starting with smaller applications and increasing scale by time [74] while Şahin and Örselli think the opposite. [75]

The fourth and the last problem is the lack of adequate technical infrastructure. Turkey privatized its incumbent operator a couple of years ago and the problems related to network infrastructure are still an important heading on the agenda of this recently privatized company. Electronic communication infrastructure contains many sunk costs which cannot be avoided when an upgrade is applied. As a result of this, the new company is trying to solve the problems of network in an economically feasible way which might create additional costs for the

operators using the infrastructure. However this practice always creates problems between the incumbent operator and the other operators which generally result as new cases in the courts and it slows the technological development of network by limiting the supply of many e-services including e-government. Seferoğlu, Çelik and Çelen argue that there is a possibility of not completing the e-transformation because of the high sunk costs associated with developing infrastructure [76] while Çelikkol is more optimistic about the subject proposing connections not only to computers but also to information kiosks, ATMs and other publicly available sources to avoid the potential problems and to utilize the infrastructure better. [77] Acar and Kumaş emphasize the interoperability dimension in developing the technical infrastructure suggesting that it should be compatible with international standards to avoid multiple costs. [78]

6. PROPOSED SOLUTIONS

We identified many problems related to the e-Government transformation by using local and international data and we combined the list of these problems with the list of other problems that were identified by other studies focusing on the different dimensions of the e-Government subject. Now it's time to propose solutions to these problems. While doing this, we will discuss possible solution alternatives for each problem by analyzing the problem domain in detail and considering the current capabilities of Turkish governmental system.

Problem: There is no long term strong and consistent strategy associated with effectively realizing the e-Government transformation.

Discussion: This problem is the main problem which is the direct or indirect source of many other problems. e-Government transformation is not a simple thing that can be realized in a very short time without spending too much money. The strategies related to e-Government transformation should be long term ones independent of the short term policies of administrations. Turkey is a democratic country so it is natural to expect changes in government policies when the administration changes but even in democratic countries there are some long term national strategies applied independent of the administration because of

the fact that cancelling, re-designing and re-implementing these strategies might bring a lot of costs and losses. These strategies are designed for one time and implemented for many years until they become insufficient to respond the needs of society either economically, technically or legally. e-Government transformation strategy is one of these strategies because it has strong connections with many other long term strategies like education strategy or health strategy. As a result of this, the first thing that should be done is designing a national strategy which will cover all aspects of the subject in a technologically neutral way. The strategy document should be generic in defining the aims, institutional structure and long term goals and it should not reference specific technologies as the technology is a developing thing that has the possibility of being obsolete in a very short time. Government can develop this strategy in two ways. First of them is establishing an institution solely for this strategy which will be responsible for developing and following it while the other is giving the responsibility to an institution that is already established.

Proposed Solution: Turkey is following the second approach for its short or medium term strategies about e-Government transformation since 2003. In fact the responsible institution for developing the strategies about the subject was changed three times. As long term e-Government transformation strategy is an important one that should be followed consistently and as the current approach applied for short or medium term strategies is not solving this problem, what we propose for the solution of this problem is establishing an institution solely for the long term strategy which will be responsible for developing and following it. This institution should get the views of other public institutions, NGOs, academic institutions, businesses and citizens before finalizing the new long term strategy as the consequences of this strategy will affect all of these parties in the following years.

Problem: Transformation plans focus on short or medium term. There are not any long term plans at the governmental level. Time limits, due dates, planned milestones and desired outputs are not clearly defined. Reward and punishment mechanisms are absent.

Discussion: This problem is the natural consequence of the first problem because it becomes impossible to prepare long term plans for the e-Government transformation without a long

term strategy. As long term transformation plan cannot be prepared, time limits, milestones and desired outputs cannot be decided and it becomes impossible to assess the situation of public institutions to apply reward and punishment mechanisms. The long term transformation plan should also be as technologically neutral as possible parallel to strategy but as it is a plan it might be updated easier than a strategy so if specifying a technology is unavoidable it might contain references to specific technologies in broader sense. The plan should cover the details of achieving a successful e-Government transformation by describing the general responsibilities of public institutions from a holistic perspective. It should not go into detail for each institution as going into details is the job of institutional plans and there is always a possibility to experience re-organization in the government structure because of the policies of administrations focusing on abolishing some old institutions and setting up new ones. There are two ways to prepare this plan. One of them is giving the responsibility to the organization which is responsible for developing the long term strategy while the other is forming a council which contains representatives from all related institutions.

Proposed Solution: Turkey is following the second approach for its short or medium term plans. This approach is also not working very well because of the fact that representatives of related institutions have different priorities and they are unconsciously affecting the final decisions of council by imposing their institutional aims. What we propose for the solution of this problem is giving the responsibility of preparing long term transformation plan to the institution established solely for developing the long term strategy. As newly established institution will be in touch with other public institutions, NGOs, academic institutions, businesses and citizens in the process of preparing national strategy, it will have a chance to develop the best plan which is consistent with it.

Problem: Institutions create their own way of transformation instead of a unified approach. They differ from each other in the level of transformation and establishing a common base at governmental level becomes harder.

Discussion: Similar to previous problem, this problem is again the consequence of the problem preceding it. Public institutions are not stand alone entities; they are rather a part of an

interacting system. However if this interaction is not well-coordinated, the harmony of the total system immediately gets out of order like a domino effect. One way of achieving harmony between public institutions is forcing them to operate under pre-defined plans imposed by a central authority. This method comes from the traditional bureaucracy and it can be used for the e-Government transformation case as we proposed a central authority which is responsible for developing long term national strategy and preparing long term transformation plan. In this setup, the central authority should provide other public institutions guidelines, standards, methodologies and pathways in addition to time limits, milestones and desired outputs which are already stated in the long term transformation plan. In other words, the central authority should also give how to do information with what to do information. There are again two ways to do this. The central authority might play a role of an advisory council for the information it provides or it might play a role of auditing authority.

Proposed Solution: Many organizational structures established for e-Government transformation is acting similar to first approach in Turkey and it is obvious that the first approach does not solve the problems effectively. What we propose for the solution of this problem is giving the power of being an auditing authority to the newly established institution to apply corrective action when needed.

Problem: Problems related to e-Government transformation are associated to wrong reasons. This decreases the speed of finding proper and efficient solutions to these problems.

Discussion: The main reason of this is not having sufficient information about the problem sources. Sufficient information can only be obtained by frequently getting the views of public institutions, NGOs, academic institutions, businesses and citizens and constantly updating short term plans. This is because of the fact that these parties are the main actors using e-Government services and they are the ones which are coming up with the problems. One most important mistake we noticed when we are examining e-Government services in Turkey is the lack of adequate feedback mechanisms integrated into governmental websites supplying these e-services. If there is no feedback mechanism or if the feedback mechanism is not working efficiently, the institution supplying the e-government service never recognizes the areas to be

improved. Users have two options in this situation, they may either develop their own solutions if the systems lets some amount of customization and flexibility or they may give up using the electronic service and prefer to do it manually. In fact this might be the main reason of phrase "No need" we discussed in Chapter 3. There are three ways of solving this problem. First of them is obligating public institutions to supply feedback mechanisms, second of them is giving the responsibility of getting feedbacks to central authority and third of them is establishing a different institution that only deals with feedbacks.

Proposed Solution: Unfortunately Turkey is applying none of these mechanisms. What we propose for the solution of this problem is obligating public institutions to supply feedback mechanisms as the other solutions might not be effective because of the fact that the e-Government services are best known by the institutions which supplied them. This obligation should also be audited by central authority from time to time and aggregate evaluations of feedbacks should be integrated to updates of long term transformation plans.

Problem: Number of problems related to e-Government transformation is increasing at a rate that's higher than the rate of solutions. Number of organizational and technical frameworks utilized is lower than needed.

Discussion: This problem is partially dependent upon the previous problem. If the previous problem is solved effectively than the rate of solutions will increase as a natural consequence of this and it will help the rate of solutions outweigh the rate of problems. However the other part of problem is dependent upon the high rate of problems. Central authority should also use the feedback mechanism to make suggestions to the institutions which are providing e-government services with high rate of problems. In fact an indexing mechanism should be utilized by central authority to define the acceptable boundaries for problem rates.

Proposed Solution: Unfortunately Turkey does not have any system to cope with increasing rate of problems in e-government transformation too. What we propose for the solution of this problem is forcing the public institutions to stay in the affordable limits by applying an indexing mechanism which works on the idea of continuous improvement by utilizing organizational and

technical frameworks as much as possible. Central authority should be responsible for keeping the track of this index and applying corrective action on public institutions when they are not doing well.

Problem: Awareness level of administration about the problems related to e-Government transformation is still low even though it continues to increase day by day.

Discussion: This problem is similar to chicken and egg problem because of the fact that both parties of the problem which are users of the e-government services and the administration can initiate the action about increasing the awareness of level other party. If we consider the users of the e-Government services initiate the first action to increase the awareness level of the administration then there are two probable ways of doing this. One of them is directly increasing awareness level with increasing public demand because if something is demanded by society then it automatically increases the awareness level of the administration. The other is indirectly increasing awareness level with the help of NGOs and academic institutions focusing on the issue.

Proposed Solution: We believe indirect approach is better to use to solve this problem because it is really hard to unify all users in the society to act in the same way. As NGOs and academic institutions are organized bodies representing many different communities forming the society and as they have a really strong influencing power, they might be used in coordination with central authority to increase the awareness of the administration.

Problem: Social, legal, economic, security, risk, tool and interoperability dimensions of e-transformation are either not considered or only considered partially.

Discussion: These problems are analyzed under a single problem category as they all depend on the lack of long term e-Government transformation plan. To solve these problems

- Projects to increase the computer literacy and the awareness of whole society should be designed and implemented with the help of NGOs and academic institutions to provide

a way for all citizens to reach educational resources on using information technologies better.

- Human studies should be conducted in public institutions and the views of workers who are responsible for providing services over e-platforms should be evaluated to decrease the resistance to change. In addition to this, motivational practices should be applied to increase the participation in the change process that is brought by the e-Government transformation.

- A total legal revision on laws should be done to prevent multiple changes creating conflicts between laws and regulations. The central authority should be responsible for coordinating these revision efforts.

- The methodologies of calculating costs, benefits and return on investment associated with the e-Government projects should be defined. Each public institution should be obligated to report the results of these calculations to central authority. The central authority should keep the track of these records to provide benchmarks for the upcoming projects.

- e-Security, e-Risk, e-Emergency and e-Backup sub plans should be prepared by the central authority. These plans should be shared with public institutions and citizens to increase the awareness. Standards related to security issue should be defined and applied by all public institutions.

- Main tools of the e-Government which are the e-Government Gateway and the e-Signature should be marketed better to achieve widespread use. Costs associated with using them should be decreased as much as possible.

- The central authority should provide interoperability by announcing and obligating technical rules, standards and requirements. These rules, standards and requirements should be updated from time to time to keep up with the technological developments and the central authority should audit public institutions to follow whether they are applying updates.

Proposed Solution: What we propose for doing all the above is establishing a powerful authority which will be the center of all e-Government transformation efforts and giving the responsibility of preparing long term transformation plan to this authority.

Problem: There is a lack of political leadership.

Discussion: This problem is partially dependent upon the awareness problem that we discussed before. If we can increase the awareness levels of political leaders about the e-Government transformation we can increase their support. However the problem is not only dependent upon awareness. Any effort to achieve a better political leadership on the issue should also consider the winnings which can be obtained by the political leaders. If we can show that supporting the e-Government transformation will bring more votes to political leaders, we can easily get their support on the issue.

Proposed Solution: What we propose for the solution of this problem is providing detailed information about the total benefit gained by society which can be used by the politicians while they are demanding votes. The job of doing this is a coordinated effort of the central authority and the statistical institution of the country as the statistical institution provides clear data about advancements in the process. In other words if people believe that the e-Government helps them to save money and time, they will reward the politicians who are implementing it which in turn provides a better political leadership on the issue.

Problem: There is a lack of managerial commitment.

Discussion: This problem is an administrative problem. Upper level managers in public institutions are not so eager to learn new things because of the fact that they are clever workers working in a strict bureaucratic system in which they cannot see the results of their efforts immediately. As a result of this they are committing themselves to neither e-Government transformation nor any other projects imposed by political leaders. The obvious solution of this problem is providing some kind of flexibility and power to them to enjoy their managerial positions and to see the immediate consequences of their decisions.

Proposed Solution: What we propose for the solution of this problem is developing a framework under the long term transformation plan. This framework should transfer some of the responsibilities to the managers of public institutions in the process of completing institutional e-government transformation efforts. The central authority should draw the boundaries of this framework to provide some kind of flexibility to the managers of institutions. Reward and punishment mechanisms could also be used to strengthen this system.

Problem: There is a lack of institutional support.

Discussion: This problem is dependent upon the lack of social dimension explained previously. The human resources of all public institutions including technical and non-technical workers should get adequate education about the e-Government transformation customized according to their job definitions. Studies developed for eliminating the resistance to change should be used to remove the idea of seeing the e-government transformation as a burden. The real transparency and efficiency obtained by the e-Government services should be explained to the workers and the workers should be motivated to learn and to apply the e-transformation requirements.

Proposed Solution: What we propose for the solution of this problem is the same thing we proposed before. It is establishing a powerful authority which will be the center of all e-Government transformation efforts and transferring the responsibility of preparing the long term transformation plan to this authority.

Problem: There is a lack of adequate technical infrastructure.

Discussion: This problem originates from the privatization of incumbent operator in Turkey and the only solution is fastening the legal system. As this solution is the focus of another study, we will not discuss it deeply here. However some incentives might be given to the incumbent operator or the other operators in the projects related to the e-Government transformation to relieve the symptoms until the legal system finds a better way to decide faster.

Proposed Solution: What we propose for the solution of this problem is providing incentives by carefully analyzing whether there is a real need or not. As unneeded incentives might create economic problems in free market economy, the central authority should define the way of effectively doing it together with Ministry of Finance and Ministry of Economy.

7. THE APPROACHES OF SUCCESSFUL COUNTRIES: TWO BRIEF EXAMPLES

Most of the solutions we proposed for Turkey in the previous chapters of this thesis are developed only for Turkey considering the custom characteristics of the country along with the history of the transformation efforts. The centralized system offered for effectively realizing the Turkish e-Government transformation might work in other countries while it might not work in some other ones. This is because of the fact that, the e-Government transformation issue is dependent upon many factors like economic conditions, legal base, technical infrastructure, social acceptance and political environment. As these factors are different for each country, it is impossible to provide a universal set of movements which can be used everywhere to effectively complete the transformation. The only two things that can be stated as the common success factors for all countries are having a long term strategy and a transformation plan for the e-Government transformation and continuously and consistently following them independent of the administration. The detailed methodology including using a centralized or decentralized approach or being strict or flexible should be designed according to the needs of the country and the society. We put lack of a long term strategy and lack of a long term transformation plan to the top of problem list of Turkey in Chapter 6 because of this to follow an approach starting from common and going towards more country specific problems while analyzing the situation of Turkey. At this point it will be helpful to look at the situation of some other successful countries which follow different approaches to support our view about this issue. Table 4 and Table 5 in Chapter 4 present the e-Government development scores of the top five countries in 2010 and 2012 by using the data obtained from United Nations e-Government Survey. These tables contain two countries which are very successful in the e-Government transformation efforts one of which is South Korea and the other is the United

States. Parallel to our discussion South Korea applies a centralized approach while the United States is totally decentralized in the e-Government transformation issue. Although the approaches are totally opposite, both of the countries share two common things in realizing an effective e-government transformation. One of them is having a well-defined long term strategy and a transformation plan and the other is continuously and consistently following them independent of the administration. We believe it will be useful to give some brief specific information about both countries before concluding our thesis.

7.1 South Korea

South Korea's e-government transformation efforts started at the end of the 1980's with a very similar approach to that of Turkey. This initial period focused on performing major governmental tasks with computers. A special network named the National Backbone Computer Network (NBCN) was established in this period and major databases containing information about vehicles, real estates, residence records were formed. [79] In addition to this, Korean Government initiated five projects dependent upon NBCN to form five national networks which covered administration, finance, defense, security and education. [80] 1994 was the key year for South Korea in the e-Government transformation efforts. Ministry of Information and Communication (MIC) was formed and the project of building the Information Super Highway (ISH) of South Korea started. [81] This period was the booming period of many e-government services including the ones on taxes, procurements or customs. [82] The developments continued with the enactment of the Framework on Informatization Promotion Act of 1995. This act served as the main legal document to establish a base for the e-Government transformation efforts across the country and it created a committee named the Informatization Promotion Committee to coordinate the e-Government transformation progress. Realizing the importance of feedbacks, Korean Government initiated an evaluation system in 1997 and established the e-Government Gateway of the country in the following year. [83]

Beginning of the 2000's was the accelerating period of the e-Government transformation efforts in South Korea. The Promotion of Digitalization of Administrative Work for E-Government Realization Act was enacted in 2001 which led to formal establishment of the e-Government structure and 11 new e-Government projects were initiated to support the transformation efforts. These efforts were strengthened with the promotion of additional 35 new e-Government projects until the end of 2007. [84] The main reason of this increase was a document named the Participatory Government's Vision and Direction of e-Government. This document focused on creating the World's Best Open e-Government containing very specific performance indicators like increasing online public services to 85% or raising the utilization rate of e-Government programs to 60%. [85]

Korea is still following the strategies identified in the Participatory Government's Vision and Direction of e-Government document and the country focuses on achieving sustainability in four main areas which are innovating the way government works, innovating civil services, innovating information resource management and reforming the legal system. [86] Although the responsibility of realizing the e-Government transformation is currently under the custody of Ministry of Public Administration and Security (MOPAS), the long term strategy and transformation plan is a slightly updated version of initial strategy which has been followed continuously and consistently for many years. [87]

Both the structure and efforts of realizing the e-government transformation in South Korea are very centralized. In fact, although the country is so successful in the e-Government transformation by using this centralized approach there are some efforts to solve the probable problems associated with it. A special committee named the Presidential Committee on Government Innovation and Decentralization was formed and it is still working on decentralizing the e-government transformation efforts even though the effect of centralized approach is still very powerful in the country. [88] This situation again emphasizes the fact that successfully implementing the e-Government transformation is dependent upon country specific factors rather than universal rules. Chun Kim categorizes the success factors of the e-

Government in South Korea under three main headings which are Strong Government Leadership, Comprehensive Institutional Support and Strategic Investment and Entrepreneurship. He places long term strategic and sustainable plans under his first category with the strong leadership from president. He also emphasizes the importance of creating enough funds and having a highly educated and skilled work force under the remaining categories along with many other factors affecting successful e-government transformation in South Korea. [89]

7.2 The United States

While South Korea followed a centralized method to achieve success in e-Government transformation efforts, the United States applied a totally decentralized approach at the same time period. Until the end of the 1980's the number of efforts to apply a federal policy over the e-Government transformation was so small. [90] Each state was responsible for its own policies in realizing the e-Government initiatives and the most important federal law related to subject was Brooks Act of 1949 which had established a federal agency named General Services Administration (GSA). GSA was only responsible for IT acquisitions in all federal agencies across the country. [91]

With the booming internet period of the 1990's, the federal government recognized the importance of the e-Government concept and the Chief Information Officers Council (CIO) was established by Clinger-Cohen Act of 1996. [92] The council's perspective was totally different from that of GSA because it focused not only on IT acquisition but also nine other factors including policy, strategic planning, performance and results based management, process improvement, capital planning and investment, leadership management, technology assessment and security and architectures. [93] In other words, the council covered every aspect of the e-Government transformation by emphasizing the concept of serving the citizens. While the CIO council dealt with these issues, the federal government supported it with the data obtained from the National Performance Reviews (NPR) containing six month reviews of many government issues including the e-Government transformation. [94] The NPR report of

February 1997 specifically focused on the e-Government issue. This report was named as Access America: Reengineering through Information Technology and it was the first formal step of administration in the progress of realizing the need for unified e-Government transformation. [95] The efforts of the federal government initiated by the report got the attention of other groups like the National Science Foundation, the Council of Excellence in Government and the National Research Council and these bodies also started to work on the subject supporting the federal government's practices. [91] As a result of these combined efforts, the e-Government Gateway of the United States started to serve American citizens in 2000. [96]

e-Government transformation efforts in the federal government continued with the new position established under the Office of Management and Budget (OMB) in 2001 and this position was named as the Director for Information Technology and e-Government. [97] The division led by this director created the e-Government Strategy of the United States in 2002. This strategy contains 24 projects categorized under four headings which are government to citizen projects, government to business projects, government to government projects and projects related to internal efficiency and effectiveness. [98] Main aims of the strategy are simplifying delivery of services to citizens, eliminating layers of government management making it possible for citizens, businesses, other levels of government and federal employees to easily find information and get service from the federal government, simplifying agencies' business processes and reducing costs through integrating and eliminating redundant systems, enabling achievement of the other elements of the President's Management Agenda and streamlining government operations to guarantee rapid response to citizen needs. [98] Unifying efforts of this strategy were backed up with the e-Government Act of 2002 which contains articles about the Office of Management and Budget, Electronic Government Services, Federal Management and Promotion of Electronic Government Services, Information Security, Authorization of Appropriations and Effective Dates and Confidential Information Protection and Statistical Efficiency. [99] Similar to South Korea, the United States is still applying the slightly updated version of this strategy however long term transformation plans are developed

and applied by states instead of the federal government because of the governance structure of the country. [100]

Both the structure and the efforts of realizing the e-government transformation in the United States are highly decentralized and tried to be unified by the federal legislations. In fact, the United States follows the reverse path when compared to that of South Korea. This situation again emphasizes the fact that successfully implementing the e-Government transformation is dependent upon country specific factors rather than universal rules. Lowery categorizes the success factors of e-Government in the United States under two main headings which are Governing Policies and Practices and Organizational Readiness. She places having a process for identifying the e-government initiatives and establishing priorities under her first category to emphasize the importance of having a long term strategy and plan. [101]

8. CONCLUSIONS AND FUTURE WORK

After the introductory chapter explaining the focus of our research, we began our second chapter by deeply investigating the e-Government transformation issue in Turkey by presenting major developments between 1990 and 2011 to establish a solid base for the subsequent chapters. In this second chapter, we presented unifying efforts of administration in addition to significant individual initiatives of selected public institutions and we emphasized that we would evaluate the success of the country instead of sufficiency of these developments.

Consistent with our aim, our next chapter evaluated the success of the country by using up-to-date local data. Initial findings of this chapter were the frequent changes experienced in the scope, function, integration and related institution of the e-government projects, which had a negative impact on success. In addition to these, we discovered that the general responsibility of coordinating the e-Government transformation had experienced a significant change three times which increased the magnitude of this impact. Our next step in this chapter was to evaluate the success by using detailed statistical information obtained from local sources. We showed that there was a decreasing trend in the percentages of using e-Government services

between 2007 and 2010 even though the percentages of internet access nearly doubled in the same period. We also cross checked our analyses with the data of e-Commerce services for the same period to be sure about the fact that the problem was only related to the e-Government. This chapter ended with the discussion of reasons of not using the e-Government Services. We figured out that government authorities responsible for the e-Government transformation were aware of this decrease but they attributed it to a misrepresented cause.

Our fourth chapter focused on evaluating the success of the country by using up-to-date international data. As an initial step, we compared the ratio of people using internet and the ratio of broadband internet penetration of Turkey with those of the EU27+ and the United States. We used these two information society indicators to show that they put a relative upper limit to the e-Government transformation efforts in Turkey and we enhanced our findings with an international benchmark study showing the rank and score of the country for network readiness. This benchmark study not only proved our initial findings but also showed us a decreasing trend in the network readiness of the country. Our next step in this chapter was to analyze two international benchmark studies which only focused on the e-Government issue. These studies showed us an increasing trend in the scores of Turkey with a decreasing trend in the rankings of it. We evaluated the data on hand with the positions of world and emerging leaders and concluded that the number of problems was increasing even though the problems were being solved more efficiently when compared to the past.

We devoted our fifth chapter to present the problems we inferred from the analyses which we had made on local and international data and we enhanced this chapter by adding problems stated in other studies. At the end of this chapter, we identified 16 problems related to the e-Government transformation of Turkey. 12 of these problems came from our analyses while the remaining four came from other studies. We also ranked the problems from the most general one to the most country specific.

In our sixth chapter, we analyzed each problem identified in the previous chapter and we discussed possible solution alternatives for these problems by examining the problem domain in detail and by considering the current capabilities of the Turkish governmental system. Although the chapter contains a specific solution for each problem, the main suggestion of the chapter forming the basis for the solutions of all problems was to gather the transformation efforts under the custody of a central authority which would be responsible for preparing and implementing the long term strategy and the transformation plan of the country.

Our seventh chapter which was the last chapter before conclusion presented two successful country examples, one of which applies a centralized approach while the other applies a decentralized one to realize an e-Government transformation. We provided brief summaries of the e-Government transformation efforts in both of these countries to establish a base for the following discussion which was the uniqueness of the e-Government transformation efforts for each country. The chapter ended with idea that it is impossible to provide a universal set of movements which could be used everywhere to effectively complete the transformation except two things. One of them was having a well-defined long term strategy and a transformation plan and the other was continuously and consistently following them independent of the administration. The discussions on this issue were also supported by the views of researchers working in the field for both countries.

In summary, there are a lot of efforts to overcome the problems related to the e-Government transformation in Turkey but previous analyses in this thesis clearly show that the success level of the country in realizing the e-Government transformation is lower than expected and the number of problems is increasing day by day. The main reason of this is the lack of a long term strategy and transformation plan and we believe this strategy and plan should be prepared and implemented by a central authority because of the structure of the Turkish governmental context and the country's previous experiences. Although a long term strategy and a transformation plan are the common prerequisites of the success for realizing the e-Government transformation in all countries, the details of these should be customized

according to the needs of Turkey similar to those of the other countries presented as successful examples in this study. The proposed central authority should get the views of other public institutions, NGOs, academic institutions, businesses and citizens before finalizing the new long term strategy and transformation plan as the consequences of this strategy and plan will affect all of these parties in future. In addition to this, the central authority should also check whether the strategy and the plan are applied consistently and continuously. While the central authority is doing this, the administration and the other public institutions should focus on solving the other specific problems considering the views and the guidance of the authority to prevent the probable conflicts between the strategy and the real actions.

Researchers working in the field might use the information presented in this thesis to do further studies in the subject. As the main focus of this thesis is doing a country-wide analysis, any researcher might use this thesis as a part of a broader perspective for institutional studies or as a part of a narrower perspective for regional or international studies. The thesis also covers a pre-defined time frame while doing this country-wide analysis. This time frame is between 1990 and 2011. So researchers who want to do similar country-wide analyses for different time frames covering either the past or the future might use this thesis as a starting or ending point.

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