LAPPEENRANTA UNIVERSITY OF TECHNOLOGY
FACULTY OF TECHNOLOGY MANAGEMENT
DEPARTMENT OF INFORMATION TECHNOLOGY

Master's Thesis

THE PROGRESS AND OBSTACLES OF IMPLEMENTING AND IMPROVING E-GOVERNMENT IN ISLAMIC REPUBLIC OF IRAN

The topic of the master's thesis has been accepted in the Departmental Council of the Department of Information Technology, on October 4, 2010.

Examiner: Professor, Ph.D.Kari Smolander

Supervisor: Associate Professor, D.Sc (Tech.) Erja Mustonen-Ollila

Lappeenranta, Dec 1, 2010

Fatemeh Ahmadi Zeleti
Sanaz.Ahmadi.Zeleti@lut.fi
Yalda0333@yahoo.com

ABSTRACT

Lappeenranta University of Technology
Department of Information Technology

Fatemeh Ahmadi Zeleti

THE PROGRESS AND OBSTACLES OF IMPLEMENTING AND IMPROVING E-GOVERNMENT IN ISLAMIC REPUBLIC OF IRAN

Master's Thesis 2010

89 pages, 4 figures, 15 tables

Examiners: Professor, Ph.D. Kari Smolander

Supervisor: Associate Professor D.Sc (Tech.) Erja Mustonen-Ollila

Keywords: Iran e-Government, e-Government obstacles, e-Government, e-Democracy, e-Administration, e-Services, m-Government, e-Payment, e-Features

To improving efficiency and transparency of government services, government authorities may increase the frequency of interaction between citizens and government as well as improving the quality of the government services and trust. Electronic Government (E-Government) in definition is the delivery of government services to citizens, businesses, and government organizations through the use of internet, web based applications, and Information and Communication Technologies (ICTs) is the solution to build more reliable and efficient contact with citizens. Like the developing and developed countries, Iran also has been processing the various aspects of ICT, IT, and e-Government. Though, in order to implement and improve e-Government; Iran has faced with some obstacles. Therefore, the purpose of this thesis is to study progress of e-Government and identify obstacles of implementing and improving e-Government in Iran. In this thesis, based on the literature review, the progress of e-Government in Iran was studied and various obstacles were identified. Therefore, as a result, e-Government of Iran is said to be in the transactional stage of the United Nations' e-Government maturity stages. In addition, establishing more reliable, efficient, and accurate e-Government initiatives, plans, guidelines, and strategies will extremely enhance e-Government status of Iran. On the other hand, the needs of the citizens should always be under consideration when implementing and improving e-Government services; because citizens are considered to be at the core of every e-Government services and the responsibilities of the authorities.

PREFACE

This master's thesis was written during 2010 in the Department of Information Technology at Lappeenranta University of Technology.

Enjoyment feeling in doing my thesis was the first impression that was experienced. I have learned a lot during doing my thesis. This master's thesis has more motivated me in doing scientific research. On the other hand, it increases my interest in the field of e-Government which is a hot topic today.

I am very pleased, honored, and deeply indebted working with Professor Kari Smolander and Associate Professor Erja Mustonen-Ollila from Lappeenranta University of Technology who acted as my supervisors for this thesis. Special thanks to Professor Kari Smolander for offering me an office in the Software Engineering Laboratory for working on my thesis. This has extremely speeded up my performances.

I also want to express my special gratitude to my lovely family, especially my mother and father for their endless love, support, guidance, patience; they have extended me every step for my life.

Special thanks to my sister who is studying master's in Energy Department at Lappeenranta University of Technology for her love and support.

Lappeenranta, Dec 1, 2010

Fatemeh Ahmadi Zeleti

TABLE OF CONTENT

ABSTRACT ..... **ii**

PREFACE ..... **iii**

TABLE OF CONTENT ..... **iv**

LIST OF FIGURES ..... **vii**

LIST OF TABLES ..... **vii**

ABBREVIATIONS ..... **viii**

1 INTRODUCTION TO THE THESIS **1**

1.1. Purpose of this Thesis 4

1.2. Research Questions 5

1.3. Disposition of the Thesis 5

2 E-GOVERNMENT: BENEFITS, CITIZENS, BUSINESSES, AND GOVERNMENT ORGANIZATIONS **7**

2.1. The Definitions of the Main Terms 7

2.2. E-Government 12

2.2.1. Perspectives of E-Government 12

2.2.2. Requirements for E-Government 13

2.2.3. General Benefits and Goals of E-Government 14

2.2.4. Benefits: Citizens, Businesses, and Public Sectors 16

2.2.5. Major Functional Elements (Models) 18

2.2.6. Dimensions for strategic planning of E-Government 20

2.3. Citizen Focused Government 23

2.4. Accessible Services 24

2.5. Inclusiveness 24

2.6. Managing Information and Managing Changes 25

2.7. Summary 25

3 RESEARCH METHODOLOGY **27**

3.1. Research Process, Design, Information Collection and Classification 27

3.2. Research Strategy 29

4 GOVERNMENT OF IRAN **31**

4.1. Brief Discussion and History about Iranian Government 31
4.2. Parliament (Majles) of Iran 33
4.3. Political Conditions of Iran 34
4.4. ICT in IRAN: Policies, Strategies, and Programs 35
4.5. ICT Education in Iran 38
4.6. Summary 40
5 E-GOVERNMENT OF IRAN 41
5.1. Vision, Goals, and Strategies 41
5.2. The Progress of E-Government in Iran 43
5.3. E-Government Service Examples in Iran 45
5.4. Perspective of E-Government in Iran 46
5.5. Implementation of Government Electronic Administration (GEA) System in Iran 47
5.6. Elements of GEA in Iran 50
5.7. Successful GEA Implementation Requirements for Iran 51
5.8. E-Government Maturity Level and Status in Iran on 2002 53
5.9. Iran E-Government Action Plan 56
5.10. Summary 57
6 OBSTACLES OF IMPLEMENTING AND IMPROVING E-GOVERNMENT IN IRAN 59
6.1. Obstacles 59
6.2. Strategies to be Followed to Minimize the Obstacles 63
6.3. E-Government Guidelines and Solutions to Obstacles 68
6.4. Summary 70
7 STRATEGIC BUILDING AND THE NEAR FUTURE OF E-GOVERNMENT IN IRAN 72
7.1. Strategic Building 72
7.2. Making True E-Government Happen in Iran 74
7.3. Next Steps Toward the E-Government Improvement 76
7.4. Summary 77
8 DISCUSSION 78
8.1. Complementary E-Government Perspectives 78
8.2. Proposed Maturity Status for E-Government of Iran 79

8.3. Situation of the Country 80
8.4. Islamic Ideologies 81
8.5. Issue of Trust 81
8.6. People and Technology Advancement 82
8.7. Further Research 83
9 CONCLUSION 84
REFERENCES 85

LIST OF FIGURES

Figure 1. Thesis Framework

Figure 2. Research Process

Figure 3. Government System of Iran

Figure 4. Position of GEA in E-Government

LIST OF TABLES

Table 1. Major benefits of e-Government

Table 2. Main goals of e-Government

Table 3. E-Government benefits to citizen, businesses, suppliers, and other public sectors

Table 4. Major activities of TAKFA

Table 5. TAKFA laws, policies, and regulations

Table 6. TAKFA objectives

Table 7. TAKFA plans

Table 8. TAKFA initiatives

Table 9. Goals of implementing e-Government in Iran

Table 10. E-Government strategies in Iran

Table 11. E-Government perspectives in Iran

Table 12. GEA implementation plans in Iran

Table 13. E-Government action plan categories which was prepared by MPO and approved by SAC in May 2002

Table 14. Obstacles

Table 15. Strategies to the obstacles

ABBREVIATIONS

E-Administration	Electronic Administration
E-Democracy	Electronic Democracy
E-Government	Electronic Government
E-Payment	Electronic Payment
E-Services	Electronic Services
ERP	Enterprise Resource Planning
GEA	Government Electronic Administration
HCI	High Council of Informatics
IS	Information System
IT	Information Technology
ITC	Information Communication Technology
LAN	Local Area Networking
LUT	Lappeenranta University of Technology
M-Government	Mobile Government
MPO	Management and Planning Organization
NDPBs	Non-Departmental Public Bodies
NICTA	National ICT Agency
PA	Public Administration
RQ	Research Question
SAC	Supreme Administrative Council
SE	Software Engineering
WWW	World Wide Web
WAN	Wide Area Networking
WFMS	Workflow Management Systems

1 INTRODUCTION TO THE THESIS

One of the basic policies for democratic governance around the globe is to decrease the administrative size and costs and to increase the functionality of government body. This is the motivation behind research activities within governments for utilizing them to new methods and technology. Based on this fact, the target point for this kind of governments can be considered as proper use of information and communication technology in public administrations combined with an organizational change and new skills in order to improve public services and strengthen support to public policies. This will lead us to the e-Government concept which is commonly defined as continuous and safe execution of the mutual duties and services between government and citizens in the environment of electronic communication and transaction. Obviously, based on these definitions, one can consider e-Government concept as a proper basis of good and efficient governance, keeping in mind that e-Government is more about government than about electronics [11].

"E-Government has become an explicit component of public sector reform, as an instrument to increase efficiency, strengthen competitiveness and enhance modernization " [21]. E-Government means different things for different people. Some simply define it as digital governmental information or a way of engaging in digital transactions with customers. For others e-Government simply consists of the creation of a web site where information about political and governmental issues is presented [17]. "These narrow ways of defining and conceptualizing e-government restrict the range of opportunities it offers" [17].

Furthermore, e-Government has attracted the attention of politicians, scientists, and statesmen of the world in the recent years and hence has been extensively approached by governments in many countries, many of whom have devoted considerable efforts and resources for its implementation [2].

During recent years government of Iran is moving its governmental information and activities into the online world. Issues such as those which are associated with information privacy – the ability for individuals who are the subjects of information to exercise some control over what information is collected, how it is being used, with whom it is being shared, and to whom it is being disclosed. Protecting information privacy in the context of e-Government is critical to achieve the potential benefits promised by e-Government. If citizens do not believe that their privacy will be well protected and secured, they will no longer use the available e-Government services [22].

The term e-Government is quickly becoming one of the hottest topics among government officials. Because e-Government is such a growing topic that affects everyone, it is important for the public to be informed [18]. Iranian citizen use Internet every day for various things. They shop online, pay bills online, and do research online. Now they can even renew their driver's license, renew their license plates, search for unclaimed property, and even pay their taxes [4]. The use of the government (local, state, and federal) online is called e-Government [18]. However, citizen of Iran do not fully understand what e-government is, what the government is doing to protect confidential information, and why the government must maintain such secure sites.

The traditional model of government of Iran is not working any longer [11]. The emerging vast networks of interacting public, private, and voluntary organizations could not be served using the traditional setups of single administrations for single services and specific functions. Responding to complex problems of societies and providing solutions could only be provided through collaboration between government body members, and also with internal as well as external entities, including other governments [10]. In fact, Iranian leaders and government have started to realize the vital necessity of modernization in order to make improvements and strengthen and sustain their position in the global competition [6]. New business models are needed to replace the traditional ones, experiences of which could be traced in other e-Based technologies such as e-Government [10].

Information Technology (IT) developments are changing all aspects of societies. One of the most important ones is the e-Government services. This technological revolution has also been enabling the introduction of new services, better and faster delivery of existing ones and cheaper and more effective communications between different parties. E-Government presents challenges and opportunities to transform both the operational process of government, and the nature of governance itself .It impacts on most functions in government and agencies, the private sector and civil society. In the long term, it has the potential to positively change the government operations and the interaction of citizens and businesses with government. Therefore, each government needs appropriate strategy and planning in order to implement e-Government successfully [12, 20].

Today, in this competitive world, government and citizen private information and data are supposed to be secured and the quality of the government services given to citizen should be increased. For this, ICT is playing a critical role in the daily lives of citizens and functionalities and performances of government in enhancing and revolutionizing the government services to government and citizens in doing businesses. ICT applications are made to promise to enhance the delivery of public goods and services to citizens not only by improving processes and management skills and style, but also by redefining and reforming the traditional style and concepts of citizenship and democracy [2, 17].

On the other hand, ICT and all its technologies are very powerful tools that can sharply increase the possibilities of establishing, implementing, and developing e-Government and its services which will enable transforming the governmental processes in serving citizens (G2C), businesses (G2B) and governments (G2G). Therefore, ICT have gained significant importance in modern world and various countries. ICT as a supporting tool that can increase the participation of all people of the society in social changes through establishing e-Government. Hence, employing e-Government make it increasingly possible for all people to access public information and prosper in economic and social fields [4].

E-Government promises to improve the overall functionalities and businesses of any government; however this vision is not without several serious obstacles. The complexity of implementing and maintaining e-Government to promote these services are increasingly high that in most governments, achieving a true e-Government is extremely hard and in some cases impossible. Country such as Iran with various obstacles is the best example for this thesis. Problems to implementing and improving of existing e-Government prevent this country to be able to well establish e-Government services and features [4, 11].

Nowadays, governments all over the world are embracing e-Government features to improve the public services and governmental tasks. Almost all countries and global and local governments are placing their critical information online and automating their processes so that the information would be fully available and reachable to citizens and governments [18]. Also Iran as a developing country is now encouraging its government agencies to get more connections with citizen and governments to improve businesses and citizen focus needs. The mentioned aims are now under consideration in Iran government, however several obstacles against establishing more e-Government features exists and Iran is trying to get over of all of them in order to make a better environment for implementing e-Government [2].

1.1. Purpose of this Thesis

The goals of this thesis are to:

1. Understand how e-Government in Iran is established, and implemented in order to improve efficiency in the government performances, services, and actions with government agencies and citizens
2. Identify obstacles of implementing, and improving e-Government in Iran
3. Study the current and future achievements of Iran toward e-Government

Consequently, to be able to meet the goals of this thesis, four research questions are established in section 1.2 which are going to be answered in this thesis.

1.2. Research Questions

The aim of this Master of Science thesis is to give a comprehensive study of the overview of e-Government, and e-Government and the obstacles of implementing and improving e-Government in Iran. Furthermore, this thesis aims to study how e-Government can be feasible and used to enhance the government performance and actions within the country. At the end of the thesis, readers should be able to understanding and establish knowledge about how e-Government progress in Iran, what are the obstacles of implementing and improving e-Government in Iran, how ICT is enhancing implementing and developing e-Government in Iran, and also what would be the future achievements toward implementing and developing e-Government in Iran.

Therefore, this section tells the research questions that are going to be answered in this thesis. Research Questions (RQs) are as follows:

RQ1: What is the progress of e-Government in Iran?

RQ2: How Information and Communication Engineering (ICT) enhanced the improvement of e-Government of Iran?

RQ3: What are the obstacles of implementing and developing e-Government in Iran?

RQ4: What would be the near future achievements toward implementing and developing e-Government in Iran?

To guide the readers to be able to easily find the answers to the research questions, an appropriate number of the section which contains the answers to each research question is given. Therefore, answer to the RQ1 is given in section 5.2, answer to the RQ2 is given in section 4.4, answer to the RQ3 is given in section 6.1, and answer to the RQ4 is given in the section 7.3 of this thesis.

1.3. Disposition of the Thesis

The framework depicts the process through which the thesis will be flowing. Thesis is divided into 8 different sections. Sections 1, 2, 4, 5, 6, and 7 are done based on the literature reviews. Each section is started with an introduction to give the overall idea of what the section is going to discussed. Summary of sections 2, 4, 5, 6, and 7 are also provided. The beginning will entail the introductory of the thesis and then follows the literature review which will follow in systematic order starting with e-Government as a general concept. Then the following sections are being very well organized so that each section can give ideas and information based on the purpose of the thesis. First is the introduction to the thesis. Then some general e-Government concepts and definition to some terms and perspectives of e-Government are given. This is followed by the discussion about the government of Iran and then the e-Government progress in Iran and this continues by explaining and discussing obstacles of implementing e-Government in Iran. Next is the strategic building and the future implementations of e-Government in Iran. Then, discussions and conclusion are given at the end of the thesis. A simple framework has been designed to simply show the thesis skeleton.

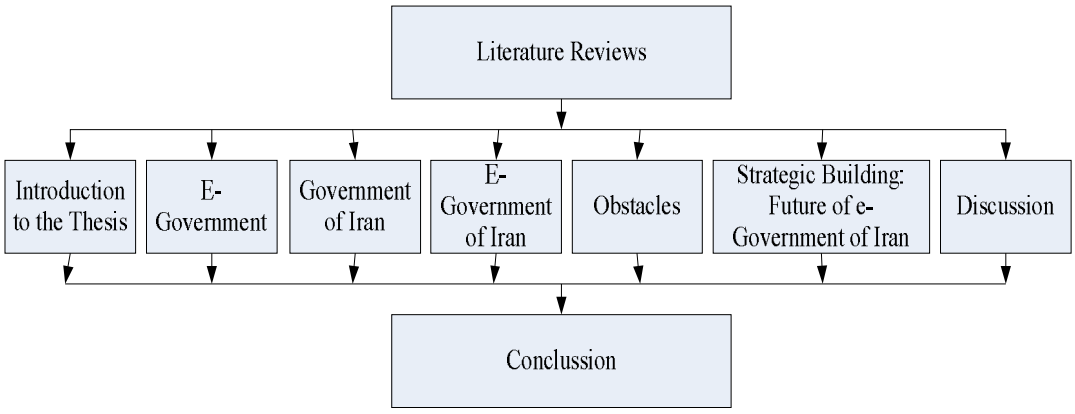

Figure1. Thesis Framework

2 E-GOVERNMENT: BENEFITS, CITIZENS, BUSINESSES, AND GOVERNMENT ORGANIZATIONS

This section provides the information about Electronic Government in general. I have tried to discuss some general issues that the readers of this thesis should be aware of to be able to understand the purpose and goals of the thesis, before I answer the research questions. Therefore, having a set of reliable background information about e-Government in this section is very critical to the readers. Hence, by studying this section the readers are able to understand and have basic knowledge about e-Government in General. In the following section, I am defining the main terms of the thesis which are the definition to “State”, ”Government”, “E-Government”, “M-Government ”, “E-Administration”, “E-Services”, “E-Democracy”, and “E-Payment”.

2.1. The Definitions of the Main Terms

In this thesis state is defined as an organized political community, occupying a territory, and possessing internal and external sovereignty, which successfully claims the monopoly of the use of force. It may or may not have an organized government to exist. “We live in a world full of states” [10]. Several states have had episodes were two or more groups dispute control of the government, but they never lost their state quality. Thus, a government is not necessary for the state to be a state as long as its existence is recognized by the international community [4, 10].

Government is a system that helps people live and work together in harmony whether in a local community or as a nation. Government is an organization that has the power to enforce laws, policies, and regulations within civil, corporate, academic, or other organizations in a given country. When we talk about government, we usually mean everything connected with running and controlling a country, including its population; territories, states, agencies, laws, policies, and authorities [4, 40].

Definition to e-Government may slightly differ from different perspectives. However, all definitions contain the same point and idea**.** In this thesis, e-Government is neither a simple tool to provide better services in a better way by Public Administration (PA) to citizens nor a simple question of down-sizing the administration (the back office) and up-sizing services (the front-office) – i.e .a rebalancing from administration to services on a planned and sensible basis [16]. Actually, it is an intersection of such multidisciplinary areas as organization theory, social science, informatics, computer science, public administration, business administration, economy, political science, law, government professionals, library science and so forth which actually tries to make the interaction and communication with citizens more effectively and efficiently [23]. Therefore, e-Government is delivering existing government services through cheaper ICT-based channels of distribution or by complementing existing services with added e-features [21].

In other words, the mean of e-Government which stands for "Electronic Government" is:

The delivery of government services through web-based Internet applications [2] to-

- Enhance the better and more efficient access to and delivery of Government information and services to citizen, government agencies, and other government organizations
- Provide a greater government service quality to the citizen [21]
- Transform government operations and improve effectiveness, efficiency, and service delivery [18].

However, there are other existing definitions to the term e-Government which I prefer to include here for further understanding. Some simply define it as digital governmental information or a way of engaging in digital transactions with customers [4]. For others, e-Government simply consists of the creation of a web site where information about political and governmental issues is presented [2].

These narrow ways of defining and conceptualizing E-government restrict the range of opportunities it offers [2, 4].

M-Government stands for mobile government and it is the extension of and complement to e-Government services and features to mobile phones [24]. The conventional e-Government efforts provide services through wired network with "interactive and relatively intelligent web applications" [24]. The value of m-Government comes from the capabilities of applications supporting mobility of the citizens, businesses and internal operations of the governments [25]. Therefore, m-Government is not a replacement for e-Government, but a complement to e-Government. The main focus of m-Government is to provide the e-Government services available to the citizens anywhere and anytime through mobile phones. For the purpose of better understanding, based on [24], some of m-Government advantages are briefly discussed below.

Cost efficiency is an advantage of m-Government. M-Government establishment and implementation may not be a cheap task to perform, but by time passes, use of m-Government will decline the government costs for implementing and offering the new services to citizens and also decline citizen costs for accessing to these services. On the other hand, efficiency can be achieved in m-Government when accessing to e-Government services through mobile phones will increase the efficiency for using the government services. Therefore, this will result modernization which is achieved when establishing, and implementing e-Government services and systems are done, and accessible through mobile phones. Therefore, people will be more modernized and technology based, when they can obtain the same services they used to have through computers on mobile phones. Hence, citizen comfort, and flexibility will increase and will be achieved by using government services through mobile phones anywhere and anytime. Though, government employees will also benefit from this advantage.

Therefore, service efficiency or better servicing to the citizen can be performed when citizen can access to government services anytime and anywhere through their mobile phones. Furthermore, accessibility and ability of reaching large

number of citizen can be accomplished by using m-Government which will allow the government authorities and organizations to access and reach large number of citizen extremely easier than when citizen use internet cable and computers. For instance, new services can be announced to citizens through their mobile phones, and it is very much faster.

There are also other advantages of establishing, implementing, and using of m-Government to citizen and also government authorities and organizations. But, the aforementioned advantages are the most visible ones. I decided to include the definition and some advantages of m-Government in my thesis for the readers to better understand this concept of m-Government which is going to be the next generation of e-Government. Therefore, the main difference of m-Government and e-Government can then be easily recognized by the readers.

E-Administration, or electronic administration, is the number of processes that is applied in an office or agency to convert the paper processes into electronic processes that can be very well controlled and monitored by the management. E-Administration is a tool to be used to decrease the amount of paper used in an office and to increase productivity, security, performance, and over all actions and tasks of a particular office. E-Administration objective is to introduce total transparency and accountability leading to better e-Governance within any organization in any nation. Government organizations make use of e-Administration to better perform where the public accountability is of special concern [11].

E-Administration is about politicians and employees and how different business systems and agencies can be integrated and combine in order to facilitate and to render activities more effective and easy to approach. However, for a good e-Administration to be implemented, skilled human resources are required [11].

Therefore, the citizen is considered as a “consumer of rights” [26], claiming what they want from their government which is “personalized and efficient public

services" [26]. It corresponds to a government "for the people" with a strategy of citizen satisfaction improvement [26].

E-Services or electronic services, give citizen to always be at the core of the governments purposes and functions. Main concern of citizens is to be able to make use of government services as quickly and efficient as possible. Therefore, e-Services focuses on citizens, and businesses and its aim is to make interaction with citizen, businesses, government agencies, offices, employees, and other governments more effective, convenient, user friendly, fast, reliable, inexpensive, and transparent [11]. E-Services for citizen particularly means that any citizen can make or initiate a request for government services and then can receive those services, and information through internet or electronic channels that can best provide the service to the particular citizen. However, for this to be achieved, different factors such as an efficient e-Service management system, public organizations, private sectors, and civil society is required to improve the services, and to motivate effectiveness and therefore, providing better services to citizen and businesses [11].

E-Democracy or electronic democracy refers to the use of Information Technology (IT) and ICT in political processes and decision making [11]. "Thin, or representative, democracy means the citizen's role is as a voter and the representative, once elected, is given an open mandate for decision-making" [27]. The aim of e-Democracy is to make more citizen participation in political decisions which are made by political factors such as government authorities, elected officials, media, political organizations, public sectors, and voters who are the citizens. This active participation can be done by the use of internet, mobile communication (sending text messages to participate and giving idea in decision making), mass media, and any other electronic technologies and channels that offer the services. Through e-Democracy, citizens or any inhabitant can easily make contact and connection with their political actors to exchange ideas even after the office hours [11]. The primary drivers for e-democracy initiatives globally have been both the prospect of taking advantage of the opportunities provided by technical developments in ICT and the perceived need to raise the

level of citizen participation in the democratic process, particularly as evidenced by factors such as declining voter turnout at elections in many democratic countries [27].

E-Payment or electronic payment refers to the online payment. Traditional transactions are characterized with the face to face trading. This is when money and the goods or the product is being exchange at the same time when both buyer and the seller are face to face [46]. However, in the e-Payment, this is not the situation when the buyer and seller are from different locations. “Compared with traditional payment schemes, electronic payment scheme is relatively advantageous, such as in convenience and speediness” [46]. Therefore, e-Payment has become one of the most crucial and critical issued for businesses and financial services [47]. A number of e-Payment systems have recently emerged on the internet to support the users’ needs and request. However, the issues of privacy and security are the other very important and essential characteristics of these services and systems which strongly need to be under investigation and concentration of the authorities [47].

2.2. E-Government

2.2.1. Perspectives of E-Government

In terms of different perspectives of e-government, a comprehensive categorization is suggested by Sharifi and Zarei [2]. According to Sharifi and Zarei [2], e-government initiatives can be divided into the following perspectives [2]:

- E-Business perspective;
- Citizen perspective;
- Knowledge perspective;
- Process perspective; and
- Telecooperation perspective.

The e-Business perspective basically takes the definition of e-Government to becoming e-commerce within the government framework. Deployment of information and communication technologies to improve and enhance the performance of the government. The citizen perspective refers to the end user (customer) concerns and expectations. The perspective encompasses the delivery mode in accessing electronic services [2, 3].

The knowledge perspective recognizes workers' knowledge and their impact when redesigning the transactions to the e-Government. This provides for the continuation of the knowledge that was accumulated over the time [2].

The process perspective is about the utilization of IT to enhance the service delivery efficiency. In this path, redesigning of organizations and their processes is necessary, which can be aided by systems such as workflow management systems (WFMS). In this perspective, the government's processes need to be coordinated, and their interrelationships should be managed. The process coordination is basically achieved through collaboration, which is related to the cooperation perspective [2].

The telecooperation perspective is about the interaction of the various agencies and trading partners involved in a work process. Therefore, an effective communication and interaction between different government agencies is providing an effective means to exploring the initial stage of e-Government development. In particular, in the initial stage of any e-Government project, having a telecooperation perspective would be useful as it provides a holistic view, focusing on the support of computer-mediated cooperation in a comprehensive sense [2].

2.2.2. Requirements for E-Government

Implementation of e-Government features shall require a lot of efforts in a systematic way and perfect plan. However, all of these requirements cannot be

mentioned in this thesis, but these plans must aim to defined target which could be considered as follows [6]:

- Using communication networks as correspondence highway between main government structure and lower levels of government agencies and customers of governmental services.
- Replacing current methods and processes with simple and efficient ones.
- Increasing the efficiency and effectiveness of government agencies in management level by flattening their management pyramid.
- Improving responsibility against customers and interacting with them in order to provide better services.
- Cutting administrative expenses and complexity of work processes in governmental organizations by joining up the parallel systems and eliminating redundancy among them.

Though, for all the mentioned aims to be visible, tangible, and effective, reliable and efficient government electronic processes and skilled human resources are required.

2.2.3. General Benefits and Goals of E-Government

There are different benefits to e-Government. E-Government can serve a variety of different objectives. Hence, major benefits of e-Government are presented in the following table:

Table 1: Major Benefits of E-Government

Major Benefits of E-Government
Faster delivery of services to citizens [11]
Generally improved service delivery and quality [11]
Reduced customers or citizen costs [11]
More accurate and convenient delivery of services to citizens that leads to citizen comfort in using services [22]

Ability to cope with more enquiries in a shorter period of time [4]
Less duplication between departments [4]
More customized approach to service delivery [2]
More accurate records of citizen and government agencies [2]
Fewer errors such as errors made by employees when dealing with citizen information and request as a paper format [2]
Improved image for government service and better and more equal relationship with the citizen [2]
Improves citizen and government agencies satisfaction [11]
Decreasing costs and administrative size of the government [5]
Smooth flow of information among citizen, private sectors and government agencies [11]
More efficiency in organizational process [11]
Interoperability between service providers and the customers
Shorter distance between government and citizen [22]
Creating a better and more user-friendly business environment [22]

E-Government, if implemented properly, brings efficiency gains, which mean governance that is cheaper, does more and is quicker, as well as effectiveness gains, that is governance that works better and is innovative [22].

Hence, the main goals of e-Government are presented in the following table [22]:

Table 2: Main Goals of E-Government

The Main Goals of E-Government
Offering effective delivery of public goods and services to citizens via quick response government
Building up good governance mainly promoting a transparent and accountable government
Expansion of public involvement
Improving the productivity and efficiency to cut red tape and minimize the

expenses
Promote priority economic sectors

E-Government major benefits were mentioned in the table above. However, e-Government benefits to citizens, businesses, and public sectors in different ways. In section below, we will look at these benefits.

2.2.4. Benefits: Citizens, Businesses, and Public Sectors

Developments in technology and the rapid fall in the price of communications and computing have transformed many people's lives. New services have been established, and existing ones are provided in new ways with new features. At their best, these services deliver the benefits of:

- Better access, with services available where and when there is a demand [11]
- Delivery through a range of media, over the counter, via call center and online [13]
- Segmentation of the market, with services tailored to suit the needs of groups within the market [3, 13]
- Responsiveness to feedback about the content and quality of services [13]
- Grouping of services around life episodes or common events [13]
- Comprehensive analysis of data about patterns of usage [4, 13]
- Involvement of users in service redesign and improvement [13]

E-Government with the help of e-Business as a new technology has transformed the way businesses can operate inside country and across border. All these decisions and actions are made to ensure that a specific country become the best place in the world to do and benefit from doing business online [3]. However, there is a clear competition can be seen between countries specially developing countries in terms of their country performances and policies to be one of the best

in the whole world in terms of global business processes and citizens satisfaction [13, 3, 4].

Perfect working e-Government methods and processes offer potential benefits for the internal business of government too. Profitable business transactions within country or outside will increase the country's potential in term of globalization. These include gains in efficiency and effectiveness from better use and management of information, whether in support of policy making or the administration of programs. Intranet technologies offer the possibility of establishing knowledge bases and cross departmental working. Extranet connections between organizations, for example between departments, the Non-Departmental Public Bodies (NDPBs) which they sponsor and deliverers of services to users, will enable business to be carried out more quickly and cheaply [13, 4].

Therefore, if e-Government is properly planned, designed, and implemented, it can perfectly benefit to citizens, businesses, suppliers, and public sectors in terms of the service availability, accessibility, quality, and fast delivery. So, e-Government services can then improve and enhance the daily operations of the businesses, suppliers, and other public sectors, while citizens can advantage from these services in order to apply their government needs to these services and receive a fast, qualified, and reliable government services.

Thus, the table below is showing the benefits of e-Government to citizens, businesses, suppliers, and other public sectors.

Table 3. E-Government Benefits to Citizen, Businesses, Suppliers, and other Public Sectors

Public sector Transaction with	Examples	Benefits
Citizens	Information, Culture, Health, Education, Taxation and transactions	Wider choice of channels, convenient, short time and lower transaction costs, better access and service availability, more

		personal services, greater awareness of services and policies, larger democratic participations, security, feedbacks, citizens awareness of the services [4, 13]
Business	Support programs, advice and guidance, regulation and taxation	Quicker and faster business transactions and operations, technology announcements, decrease in employees efforts, reducing transaction cost and time, clear business regulations and policies, security [4, 13]
Suppliers	e-Procurement	Reduced transaction costs and time, faster transaction, security, better inventory and customer management, shared data through customers and other suppliers [4, 13]
Other public sectors bodies	Better and effective communication between departments and agencies and between local and central government policy making	Greater accuracy and efficiency, reduces transaction costs and time, reduced employees effort, better data and decision sharing, faster response to citizens, better use of knowledge, flexible working arrangement [4, 13]

2.2.5. Major Functional Elements (Models)

Major functional elements of e-Government focus on four groups, each providing opportunities to transform delivery of services. These groups are discussed below.

Government to Citizens (G2C) or Government to Customers is the online non-commercial communication between local and central government sectors and the consumers of the government services [2, 11]. The consumers who are the private individuals [11]. In this model, government sectors or agencies public services are actively and visibly available to citizens. Public services and its information are fully accessible to the citizens. This model makes it easy for citizens to find and use the high quality services they are appearing to benefit from [2, 3, 4].

Government to Business (G2B) is the online non-commercial model that makes the communication between the local and central government and the commercial business sectors (production and services) available rather than the private individual [2, 11]. In this model, by the use of e-Business technologies, better communication possibilities occur and therefore, reduce the government's problems on doing businesses by eliminating the collection of the redundant businesses data and information [3, 4, 20].

Government to Government (G2G) is the online non-commercial model that makes the interactions and communications between government organizations, departments, and authorities available with other government organizations, departments, and authorities [2, 11]. Government electronic and IT administration is responsible and tasked to guide and support the government departments, organizations, and authorities to in the process of policy making and communication through the use of ICT [2, 11, 20]. On the other hand, this model improves programs and services delivery because more accurate data and information exist by the cooperation of other government organizations [2].

Internal Efficiency and Effectiveness (IEE) is the long term organizational effectiveness that would require efficient internal operations without sacrificing the quality of the services delivered to its customers [11]. This should be continuously improved so that it will improve the internal processes and service quality while driving down internal costs. Therefore, IEE offer the better use of

technologies to government agency administration in order to reduce administrative and other costs while improving the quality of services by using the best fitted IT and industry practices in any areas such as financial management, knowledge management, and supply chain management [2, 4, 11, 20]. Hence, agencies are able to develop and improve the effectiveness and efficiency, reducing delay in providing the appropriate and accurate processes and services to the government employees and improving their satisfaction in order to make the better citizen services [2, 3, 11].

These models, while they share many common aspects, are also different in terms of their aims, objectives, and key issues. For instance, communicating with the Business sector requires issues such as electronic payment, however, when it comes to citizens, the availability and access to an efficient communications and government services is of higher priority. And in G-to-G, issues such as improvement of processes and decisions quality are of significant importance. Though, the issue of security is particularly emphasized in all functions [2, 3].

However, after all, there are some activities that take place in the mentioned four groups. Activities such as [11]:

- Making information available and accessible over the Internet. For instance, regular citizen services, general holidays, public hearing schedules, issue briefs, notifications, etc.
- Offering two-way communications between the government agencies and the citizens, businesses, or other government agencies .In this model, users of the services can engage in dialogue with agencies and post problems, comments, or send their requests to the particular agency.
- Conducting transactions like lodging tax returns, applying for services and grants.
- Governance and controlling activities on online voting, and campaigning.

2.2.6. Dimensions for strategic planning of E-Government

Different dimensions for strategic planning of e-Government exist. These dimensions or parameters are needed to be well comply for a successful strategic planning of an e-Government that will lead to the successful implementation of the e-Government. These dimensions or parameters are strategy, finance, legal issues, management, security, technology, human resources, technical infrastructure, information and data, marketing, and culture. Below you can find these dimensions or parameters briefly explained.

To be able to implement e-Government successfully, an appropriate strategy is needed to be complied [12]. Therefore, strategy would be a very familiar term for all of government authorities and organizations. Every organization, business, firm, and government should be able to have an appropriate strategy to be able to satisfy their expectations [22].

This should be remembered that e-Government is not a cheap way of providing services to the citizen, hence, intelligent and proper budgeting and finance is the requirements [22]. The financial status of a government should be enough to be capable of implementing e-Government [4, 12]. Most striking is that e-Government is not implemented in a short-term [26], so appropriate strategy for budgeting e-Government can very well help to a successful implementation.

On the other hand, e-Government deals with large amount of citizens and government's data and information. Government legal issues and responsibilities are to support and secure the collection of data and information. While strategic planning of e-Government is performed, legal issues of e-Government should be under consideration [22].

Moreover, the management should be supported with the right framework and tools to be able to make decisions [12]. On the other hand, different government agencies and departments from different part of the country should also be related and connected together. All these departments should be following the same standard in designing their databases. Hence, this is the job of the management to provide and set the standard, framework, and any other factors that guarantee the

right and secured way of interaction between different agencies and departments [12, 22]

Foremost, security has been always a big issue in every business, firm, and government. Lack of security in e-Government is considered as e-Government obstacle [4]. E-Government should be well designed and implemented so that it can avoid and reject any attacks to the data of citizens and government [12].
In addition, strong technical skills, and qualifications of the leadership are all the critical factors, but owning the technology has another importance [15, 36]. Technology is needed to be used in information systems and also hardware for a successful e-Government [11].

However, behind all successful e-Government and its implementation and development; expert, knowledgeable, and skilled staffs are placed. Therefore, people are always at the core of the successful e-Government implementation [12].

Appropriate technical infrastructure is the prerequisite to implement the successful e-Government. Hence, without the proper infrastructure, implementation of a successful e-Government is not advised [12].

Moreover, e-Government is always dealing with large amount of information and data. Thus, a successful e-Government should be able to manage the data. Developing an appropriate data structure, data dictionaries, and data definition are critical to the success of data and information management [22, 26]. In this sense, managers can attempt to minimize the data related problems with sharing standards, definition with the government agencies. Aside from that, feedbacks from users can make a big role in management of data and information [12].

On the other hand, marketing refers to the marketing of government services which are offered to the citizens through web [12]. This can help to develop the services given to the citizens; improve and encourage service users to more engage with the online marketing of the government services; provides

opportunities to the less developed countries to develop their own marketing of government services; reduces organizational costs and effort; provide the better channel of communication between the government and citizens; provide the better way for government announcements on new services; provide the citizens the opportunity to see different services and compare them to find what service is fit to their needs [4, 12, 22, 26].

Therefore, to benefit and advantage from all the mentioned parameters, people should have the tendency and will to use the government services through government web pages. Hence, culture presents the way staff, and citizens think about implementing, developing, and use of e-Government. Staffs spend many years working with traditional systems and paper based jobs. Citizens used to do the government tasks such as tax payments through bank counters. Hence, changing their culture and attitude toward being completely technology and web based is one of the main parameter of the strategic planning for implementing a successful e-Government [12].

Through my comprehensive literature studies, these parameters are the most important mentioned factors that should be under consideration when strategic planning for implementing e-Government is being under study.

2.3. Citizen Focused Government

When citizens are interacting with government in order to use the government services, they are expected to receive the high quality accessible services which are provided in its much secured way. Citizens do not need to know how the government is organized and how the e-Government is implemented. What they need to know is what the services are offered to them and how they can make use of these services. They want to be updated about a new service which is being launched and what the service can offer them as a citizen [4, 2, 17].

2.4. Accessible Services

It is not enough that government authorities implement e-Government and different e-Government services in order to serve citizens, businesses, and government organizations. But the appropriateness of the different communication channels in which citizen's awareness regarding different services can increase and also giving the citizens the idea on how they can have an access to these services is very essential and critical. During the strategic planning for e-Government, it should be proposed that the services should be accessible over the internet, through mobile phones, TV, radios, and call centers. However, services should be tailored to the individuals' needs [13, 4].

New ways of doing business will change the relationship between individuals and government. Access to information will be firmly established under the Freedom of Information legislation and government organizations will be more responsive to citizens' views. At the same time, it will be vital to make sure that people can trust the systems we use, by ensuring that their personal data is protected and those systems are secured [13, 4].

2.5. Inclusiveness

Aside from accessibility of the services, services should be designed and develop in a way that they are available to every citizen and also easy to use and easy to be operated. As has been mentioned in section 2.4, different communication channels such as TV, radios, and mobile phones are the primary communication channels between government and citizens. These communication channels will become increasingly important as a means of accessing citizens on how to use government services thought internet. Telephone and call centers still remain as the preferred means of contact for many citizens. Therefore, call centers should improve their functionalities by giving their staff more access to information networks for them to be able to provide citizens with more accurate and efficient services. Aside from that, staff should be very well trained to have excellent communication skills and social behavior [4].

Online public services must be well designed and accessible to all. This includes providing services for minority language groups and those with disability or limited mobility [13, 4].

2.6. Managing Information and Managing Changes

The significance of the large amount of government information is not unfamiliar to anyone. Citizens and governments' information are valuable resources. The value of these resources is not unknown from anyone. From a normal citizen to an expert staff in the government parliament, they all are aware of the importance of this information. At the heart of this, is the way this information is used by the government agencies and public sectors [4, 5].

Implementing the strategy requires organizations to adopt coherent and compatible information policies in support of better policy making, better service delivery and more efficient working [13].

However, changes always exist. Government agencies, public and private sectors, and businesses should work in partnership to be able to support the e-Government total performances, information security, information management, as well as change management [4].

Further study on information and change management is beyond the scope of this study.

2.7. Summary

This section summarizes the contents and information that were presented and studies in "Electronic Government" section of this thesis.

A government is a system that helps people live and work together in harmony whether in a local community or as a nation. Therefore, for a government to be able to achieve this, government services should be fully available and accessible to the citizen, businesses, and government organizations. However, the quality of

services is a must. Citizen wants to access to government services as quickly and efficient as possible. They want to interact with the government authorities, and benefit from government services anywhere they are. Businesses are willing to take control on their business tasks and responsibilities and the interaction it requires with government and customers to be available from anywhere. On the other hand, citizen, suppliers, government sectors, and business owners are entitled to have the right to access to the right information and services. Each may require different kinds of information and services which are only applicable to a particular group of users. Consequently, the services the citizen wants from the government are different from what the businesses and government organizations want. So, e-Government can take care of all the issues that may arise in a country within the citizen, businesses and the government. However, for a government to implement an effective, reliable, efficient, and qualified e-Government services, many issues should be taken into account. Issues such as an appropriate ICT and ICT technologies, ICT knowledge and skilled human resources, citizen awareness and education, skilled and reliable management, e-Government strategic planning, and information and data management. All these general issues should be available for a government to implement e-Government and its services.

3 RESEARCH METHODOLOGY

In this section, the research process, design, and strategies that I have chosen are being discussed. The main focus of this section is mostly on the research strategies that are being used by the researcher for this thesis.

3.1. Research Process, Design, Information Collection and Classification

To be able to get adequate and reliable information, I have done literature review. I have done this by accessing to the electronic databases such as Wilma library database, and Nelli database portal (Lappeenranta University of Technology library database), scientific articles, conference papers, journals, few books, and other sources available on the Internet through search engines such as Google.

To accomplish this thesis, and to be able to answer to the research questions based on literature reviews, which also has involved a review and synthesis of results from scientific publications available on the Web, mostly published by Iranian authors has been performed. To get the theoretic connection I have also studied other literature in the subject field. I have therefore tried to gather and declare some relevant facts by visiting banks, schools, and hospitals when I was in Iran to help me know the real conditions and situations of using e-Government in those places. Therefore, these facts and real understanding which I have gained from being in the actual environment in Iran helped me to be able to completely understand the literatures I am reviewing to be able to answer to the research questions which relates to the essentials of this thesis.

I studied each document one by one to be capable of finding the suitable information that supports me answering my research questions. Then, based on what I have found, I made the thesis outlines and started to merge the sentences and making sections for the thesis. Research questions are then answered based on my literature studies.

On the other hand, some new sources of information may be available for me when I am in the middle of writing my thesis. Therefore, I confidently make use of them if I found some critical information that can assess my writing and add more value to my thesis.

The last step is to go through the whole thesis and try to analyze and finally to summarize the whole thesis and include my discussion and conclusion.

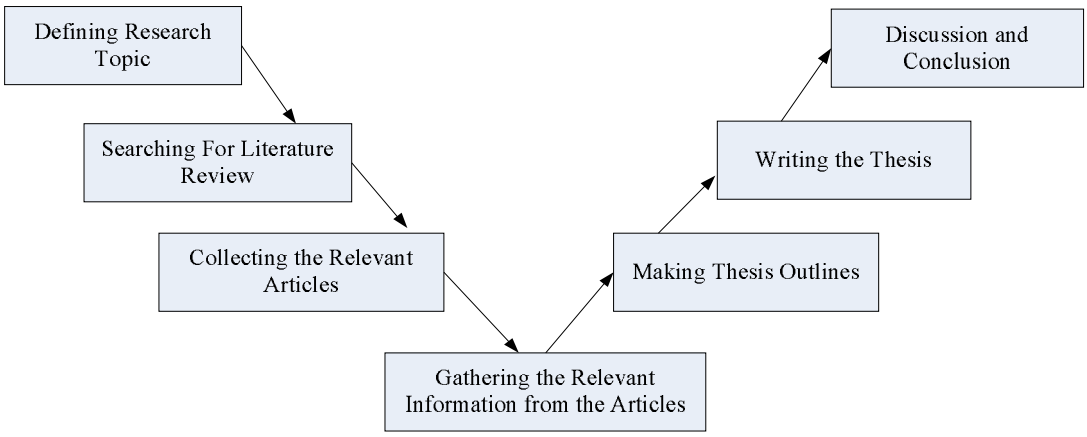

Figure2. Research Process

In this thesis, I set my objective on how to find the useful literatures, but not how to collect them. I develop my understanding about the thesis topic, and then based on my understanding; I observe and record the useful information. In this matter, the information and literatures collection process is not universal, predefined and consistent, but it is a process that fits differently to different researcher, and research papers.

Therefore, for literatures and information collection, I have had four different sources of information to find the appropriate literature and information. These sources are [28]:

Web-based sources is the first approach to online sources so that I can have the idea on where and how to find the published materials. I was also successful on finding many good journals articles, books, and conference papers online.

I have also found many good publications existing in the city library in Tehran, Iran which perfectly helped me recognizing how government of Iran works and how they implemented e-Government. However, accessing to the government information such as statistics were not allowed to those students who are not enrolled in a university in Iran.

Books are always a good source of information. I was not so successful to find many of these books related to my thesis topic. But, I could find few books which are related to the thesis topic.

Organizational archive records could be found from some government websites and libraries. However, I did not so much rely on this type of sources, but I found few sources and make use of them. For instance, archive record of Bank of India has been studied and relevant information was found.

3.2. Research Strategy

Research strategy is the collection of steps in which a researcher can follow to be able to answer the research questions. There are different strategies in which a researcher can obtain. For this thesis, web-based survey, and questionnaires could have been the essential ways for me to gather more information about the e-Government of Iran. But, due to some limitations, I was not able to implement these strategies. On the other hand, I have freely enjoyed studying of some case studies for the purpose of expanding on my views and knowledge about different e-Government studies in some countries such as Finland, Sweden, and Philippines. However, no information reflecting to these cases can be found in this thesis.

As the main strategy, I have done literature reviews and studied online forums and available questionnaires to find out how e-Government is implemented in Iran and what are the obstacles for implementing and developing e-Government in Iran.

4 GOVERNMENT OF IRAN

This section studies the government of Iran. A literature review has been performed for the purpose of studying government of Iran. In this section, parliament, political conditions, and ICT development of Iran has been studied. Brief explanations of the aforementioned subjects are given to provide the reader a big picture of the government of Iran. This section is playing a big role for the readers to better understand the following sections on this thesis which are about the e-Government of Iran.

4.1. Brief Discussion and History about Iranian Government

This section provides a brief discussion about Iranian government. Therefore, before continuing to discuss the government of Iran, it is worth to introduce Iran in few paragraphs.

Islamic Republic of Iran as the official name is a large western Asian country in the Middle East. Population of Iran is approximately 74,196,000 [19]. Its area equals the size of the United Kingdom, France, Spain and Germany combined. Iran borders Armenia, Azerbaijan and Turkmenistan to the north, Afghanistan and Pakistan to the east, and Iraq and Turkey to the west. In addition, it borders the Persian Gulf, across which lie Kuwait, Iraq, Saudi Arabia, Bahrain, Oman, Qatar and the United Arab Emirates. Shiá Islam is the official state religion and Persian the official language. The history of people in Iran covers over six thousand years, and throughout history, Iran has been of great geostrategic importance because of its central location in Eurasia [4, 19, 35].

Iran inhabitants own different cultures, traditions, languages, beliefs, and ethical groups. Different languages are in used in Iran; however, the national language of Iran is Farsi. Archaeological findings indicate human activity in Iran during the middle Paleolithic era, about 100,000 years ago [19].

The demand for establishing a democratic system in the history of Iran has started over a century ago when widespread uprising brought Shah of Iran and announced him as the **"**Shadow of God". Although the system did not last too long, people of Iran were poor in advantaging human rights and benefits of this democratic system as the country was under the control of the despotic monarchial ruling which totally ignored the legal right of the people [29].

Government of Iran is formed based on the Islamic ideologies and therefore is Islamic republic, and it is endorsed by the people of Iran on the basis of their long-standing belief in the sovereignty and power of truth and Qur'ãnic justice [35]. This was confirmed through a majority of 98.2 %of eligible voters in the referendum of 9 and 10 Farvardin, 1358 (29 and 30 March, 1980) [30].

On February 1,1979, leader Ayatollah Khomeini has returned from France to control the revolution and establishing a republic guided by Islamic principles. Before this, King Mohammad Reza Shah ruled Iran for over 38 years until the victory of Islamic Republic on 1979. On December 1979, Iranian constitution established and defined the political, economic, and social order of the Islamic Republic [4, 19].

After the Islamic revolution in Iran the politics and governing of the country took place in a framework of a republic with an Islamic ideology. This meant that Islam is not only a religion but also a political system. As results the country has ever since governed by both religious and political authorities [19, 29]. Furthermore, president of Iran has the next power after the leader with the maximum official state authority to control the performances of the constitution and the executives [19].

Figure 8, shows the Iranian government system. As it is shown in this figure, president of Iran is being selected by Iranian people around the world who are officially citizen of Iran. However, the leader of Iran who is the absolute ruler and owns the first place in the country is not nominated and selected by Iranian

people. Ayatollah Khamenei who is currently the leader of Iran has been selected by Ayatollah Khomeini, before his death.

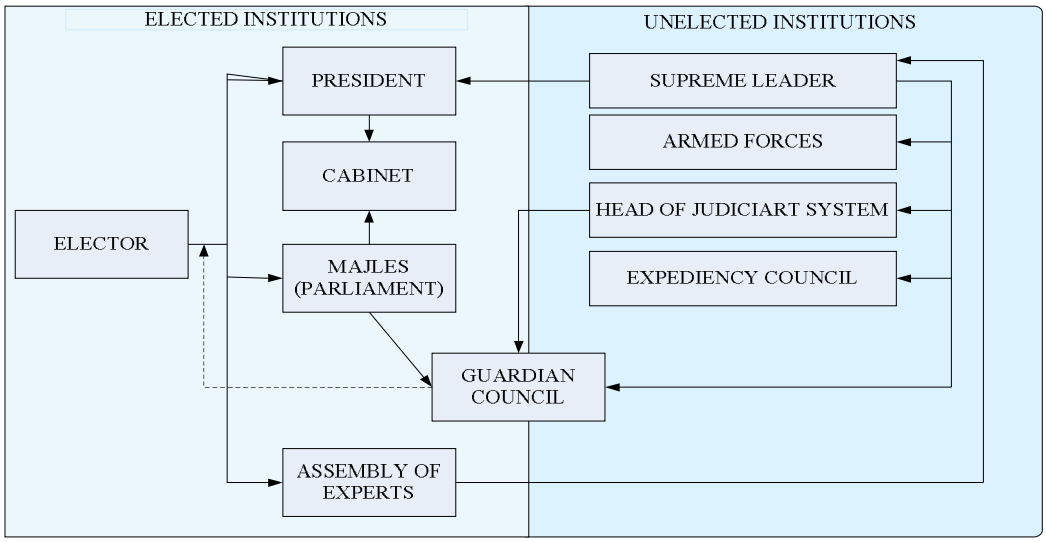

Figure 3: Government System of Iran [19]

4.2. Parliament (Majles) of Iran

The Majles, or National Assembly, consists of 290 members elected to four-year terms. The members are elected by direct and secret ballot from among the candidates approved by the Council of Guardians [19].

“In 1988, Ayatollah Khomeini established the Council for Expediency which resolves governmental and legislative issues and regulations on which the Majles and the Council of Guardians should follow” [19]. The Council then interpreted the constitution. If the rules and laws are incompatible with the Islamic ideology and law, it is back to the Majles to be revised [19, 35].

In 2005, it was announced that the Expediency Council would have responsibility for general supervision of the system, though that has not resulted in any noticeable change in this institution's day-to-day authority or operations [19]. However, in parliament of Iran, all laws and regulations pertaining to “civil,

penal, financial, economic, administrative, cultural, military, political and other spheres must be based on Islamic criteria" [31].

4.3. Political Conditions of Iran

"Iran has faced many post-revolution difficulties" [19]. One of those is the eight years war with Iraq which results in internal political struggles and economic disorder and confusion. Iranian citizen and government believe that these eight years has put them and their country behind other developing countries by that time. They also believe that if this period of time was not wasted on war with Iraq, they could have been one of the leading countries in the world.

After revolution on 1982, Majles and Iranian inhabitants were formed based on the Islamic ideologies [29]. However, this strategy is having many appreciating points in the development of the country and people of Iran, on the other hand, many other countries seems to be strange with dealing with this strategy therefore, this was the starting point for Iran to loose opportunities to fully advantage from the global political conditions. Furthermore, many Iranian citizens were still very confused with this regime that was controlled by Islamic ideologies therefore; they were not being able to manipulate their behavior accordingly. The amount of time regime should have spent on building trust, plans, strategies, and connections with other countries in order to establish a good command of political condition, was spent on controlling people inside the country. This and other similar problems happened after revolution, when Iranian politicians make their decisions based on the Islamic ideology [19].

Iran now has a variety of groups engaged in political activity; some are oriented along ideological or ethnic lines, while others are more akin to professional political parties seeking members and recommending candidates for office [29]. Conservatives consistently thwarted the efforts of reformists during the Khatami era and have consolidated their control on power since the 2004 Seventh Majles elections and President Ahmadi-Nejad's 2005 electoral victory.

Various reasons are involved in the current unappreciable political condition of Iran. However, not all of the reasons are applicable to be discussed in this thesis.

4.4. ICT in IRAN: Policies, Strategies, and Programs

No clear national ICT strategy has been developed in Iran, although many governmental entities are responsible for developing policies and strategies [32]. In this section, answer to the second research question of the thesis is give. As a result, "ICT in Iran can reduce corruption by promoting good governance, strengthening reform-oriented initiatives, reducing potential for corrupt behaviours, enhancing relationships between government employees and citizens, allowing for citizen tracking of activities, and by monitoring and controlling behaviours of government employees" [38].

As a result, comprehensive ICT Application and Development Plan in July 2002 was approved by Iranian Council of Ministers. This plan is considered a significant and effective step in the field of IT industry in Iran. The plan was prepared after 3000 hours of professional efforts, paves the way for coordination and integration of mechanized systems of various public organizations throughout the country [36]. This plan was then a crucial starting point for Iran ICT development. It might be interesting and worth to note that such comprehensive ICT plan was prepared in Singapore in 1992, US and Vietnam in 1993, Japan in 1994, Canada in 1996, Ireland in 1997, and Malaysia and Iran in 2002 [36].

The oldest entity is the High Council of Informatics (HCI), established after the Iran Revolution to systemize IT and ICT activities. Its primary role is to assess and classify IT enterprises and supervise software development activities. Another entity is the National ICT Agency (NICTA), which is led by the President of Iran, H.E. Khatami. It has the overall responsibility for ICT initiatives in the country [32]. NICTA began by late 1999, on the second year of H.E. Khatamis' presidential and ended April 2002 when the next president has set new rules. NICTA was called "TAKFA" which is a Farsi term [33]. This plan aims at creating a structured process and has clear and well stated executive goals, although it focuses on a particular domain [33, 34]. This plan has been created in the main frameworks of legislating fundamentals for human resource development, cultural and social, governmental services, extending economical

and commercial services, creating national infrastructure, information network, law, security, industry and employment. Theoretical framework of TAKFA plan is according to international institutions working in the field of information and communication application and its main concept is using information and communication technology in various sectors of Iranian community [34].

In this point, major activities of TAKFA are listed. These activities are:

Table 4. Major Activities of TAKFA

Major Activities of TAKFA
Studying the ICT achievements of other countries in detail [33] Scrutinizing the national strengths and weaknesses to make sure that the national agenda is realistic [32, 33]
Environmental scanning at the international level in order to choose the right model for Iran's ICT development process [33, 34]
Design and establishment of an executive organization to handle the complex task of steering and managing the projects [32, 33]
Developing a very clear and modern budget allocation engine to ensure that TAKFA is not hampered by traditional and bureaucratic budgetary procedures [33]

Iranian government agencies are subject to laws, regulations and formal rules (legal and regulatory constraints), and they operate within the institutional and environmental constraints [39]. However, Iran has not yet developed strong policies and strategies, but over the past two years, Iran has increased its ICT activities to be able to decrease the ICT gaps. Iran did this by putting in place the following laws, policies, and regulations:

Table 5. TAKFA Laws, Policies, and Regulations

TAKFA Laws, Policies, and Regulations
Copyright law [32]

Protection regarding foreign investments [32]
Easier and suitable methods for awarding contracts [32]
Setting regulation that stated that all national projects should be given to association of Iranian and foreign companies [32, 34]

However, aforementioned challenges may hinder the success of Iran e-Government initiatives [39]. Therefore, Iran set the following objectives which should be achieved to be able to success:

Table 6. TAKFA Objectives

TAKFA Objectives
Designing and creating infrastructure for ICT development in Iran [32, 33]
Applying comprehensive system of information and communications [32]
Increasing productive and skilled employment [33, 34]
Developing ICT skilled people (Human Resource Development [36]) and institutions [33]
Increasing and developing ICT projects [36]

But, for Iran to be able to meet these objectives, number of plans should be developed first, as the prerequisite to meet these objectives. These Plans are:

Table 7. TAKFA Plans

TAKFA Plans
Plan to establish and implement e-Government [32]
Plan for supporting ICT applications in education and expanding the IT and ICT skills in manpower in Iran [32, 34]
Plan for expanding ICT education and ICT applications in higher education [33]
Plan for expanding ICT applications in health centers, hospitals, and medical educations [32, 33]
Plan for expanding ICT uses in economy, commerce, banks, and trade [32]
Plan for expanding ICT knowledge and use for Persian script language in computer applications [32, 36]

Plan to establish more ICT institutions and parks to enhance people to get engaged with ICT and its development [33]
Specifying government domain [33]
Specifying domain for industry [33]
Plan for developing the trade services [33]

To execute the aforementioned plans, Iran undertakes the following initiatives:

Table 8. TAKFA Initiatives

TAKFA Initiatives
Developing the science institutions such as IT and ICT universities, and research institutions [32]
Developing the growth network or institution such as Ministry of education
Implementing and developing ICT in schools [32]
Implementing and developing ICT in health centers such as clinics and hospitals by developing remote control medical services [32, 33, 34]
Creating digital libraries [32]
Creating websites and information portals for all to access the services and information [34]

After all, however, for Iranian government to be successful in implementing ICT, policies, strategies, and the programs, one important issue should not be forgotten. Aside from all aforementioned items, this success will also depend on the acceptance of ICT among citizens [38].

4.5. ICT Education in Iran

The Ministry of Education established and developed ICT applications in primary and secondary schools [32]. As of 2010, statistic shows that ICT is connecting people in all city elementary schools and secondary schools and also over 40,000 villages in whole Iran are supported by ICT applications and these developments

has affected on establishing and implementing e-Government services in schools and villages. Dr. Aliakbar Jalali who is the ICT Project management has reported that over 10,000 ICT village centers exist. He has reported that all public government services which are available in the cities are now available in each village. ICT centers are responsible to educate people on how to make use of these government services. Each school is also responsible to train the students on how to operate these services [32, 33, 36, 38].

Vocational Training Institution has number of offices in each city. The number of offices depends on the size and population of the city [32]. They are responsible to educate and train people of any age [4]. ICT is now a hot topic in these institutions. ICT education and training is now given on no charge [4, 19]. Though, other institution services and training terms are not free of charge and whoever is registered should pay the tuition. However, this is not expensive and everyone can afford.

There is also ways to perform education electronically. Therefore, in this situation, education can be available to people by CDs, DVDs, and online training materials [32]. Moreover, mass communications such as radio and television is another essential medium for the government organizations and institutions to give the education and training available to the large number of population [32, 33, 38].

Aside from public organizations and institutions giving education and training to people, private organizations or private schools also exist [32, 33]. The only difference is the charges they ask. Private organizations or schools are quite expensive and not everyone can afford being in those schools and organizations. Consequently, the qualities of services are higher than the public organizations due to the limited number of registered students to these private schools and organizations [32, 33, 38].

On the other hand, in individual communities, social networks play a significant role in the acceptance of ICT applications, technologies, and services by citizens, with “acceptance and usage increases being strongly tied to positive perceptions

about e-Government and ICT by family, friends, and members of the local community" [38].

4.6. Summary

This section is summarizing the "Government of Iran" section. Iran or Islamic Republic of Iran is a large western Asian country in the Middle East with population of approximately 74,196,000. After Islamic revolution, Iran has faced and struggles with many political and economic problems and obstacles, which the most important one is eight years war against Iraq. In Iran, the highest position in the government is the leader of Iran. President has the next power after the leader and he is being elected by the Iranian people every four years. However, a particular president can be in place for two periods which each is four years. But, the leader of Iran is not being elected, but he will nominate one person to take his place after him.

Parliament of Iran consists of 290 members who each are elected for the first period of president presidential. The members are elected and approved by the Council of Guardians. Iranian government rules, regulations, and policies are based on the Islamic ideology. This is the reason why a new rule, regulation, and policy are being revised when it is found not compatible with the Islamic ideology.

Furthermore, ICT improvement in Iran took place after the Islamic revolution. However, no clear ICT strategy has been developed. TAKFA on 1999 was the significant ICT movement in Iran during those years. Although, TAKFA has ended on 2002, when a new president has set new rules, but, more and more ICT development could be visible after termination of TAKFA. Moreover, government authorities believed that, an appropriate ICT and IT education to citizen can play a significant role in further development of ICT and e-Government in Iran.

5 E-GOVERNMENT OF IRAN

This section intends to examine the progress of e-Government in Iran and its plans towards practices in the field of e-Government.

5.1. Vision, Goals, and Strategies

The vision of e-Government indicates how it will be look like in the near future. As of this time, this vision of e-Government of Iran is: “Becoming the first country in the Middle East by fully applying ICT in government processes to improve information and services delivery to citizens and businesses” [6].

To set the goals, Iran situation as well as other countries e-Government goals and plans have been studied .Thus, the goals for e-Government implementation in Iran are as follows:

Table 9. Goals of Implementing E-Government in Iran

Goals of Implementing E-Government in Iran
Creating a clear vision [37]
Ensuring every community, village, and city has the full access to Internet and e-Government services [36]
Increase the level of employment, and decrease unemployment [11]
“Providing convenient access for all to government information and services” [6]
“Improving public services and providing integrated ones” [6]
“Downsizing the government and increasing its flexibility” [6]
“Promoting social welfare, awareness and knowledge in the society” [6]
“Declining bureaucracy throughout government processes” [6]
“Encouraging people’s participation in government” [6]
“Increasing government efficiency and effectiveness” [6]
Increase the level of ICT and e-Government projects experiences and practices [37]

Achieving these goals of e-Government in Iran is very challenging. Hence, smart strategies should be set and positioned. Therefore, the strategies that are being suggested by the existing research is to overcome the challenges for e-Government initiatives in terms of information and data, information technology, organizational and managerial, legal and regulatory, institutional and environmental categories [39]. Therefore, when Iranian government has defined e-Government implementation plans which were discussed in section 4.4, they should define appropriate and proper e-Government strategies that can best face the challenges for implementing e-Government plans. However, with the existing availabilities on human resources, global interaction, and technologies available; Iran can have the following strategies:

Table 10. E-Government Strategies in Iran

E-Government Strategies in Iran
Concentrating on centralized management of e-Government [4]
Reengineering government processes [6]
Promoting IT training among people [4]
Enhancing financial resources [39]
Encouraging private sector to support e-Government related projects and creating a competitive environment [39]
Defining, approving and issuing the essential standards [4, 33]
Defining, approving and executing the required regulations and procedures [4, 34]
Benchmarking from successful e-government projects [4]
Avoiding digital divide [4]
Developing and enhancing the Government Network [4, 6]
Promoting the culture of using ICT among people [4]
Delivering and integrating government services and information electronically [6]
Developing essential mechanisms for government-people interaction [39]

“Some studies have suggested that trust in e-Government can be built through increased responsiveness to user needs and inquiries and through increased

transparency, but such efforts are thus far limited" [38] even with the right and appropriate strategy selections. This can be more visible especially for Iranian government, due to the economic, political, and other obstacles which will be discussed later in this thesis.

5.2. The Progress of E-Government in Iran

E-Government is now a hot topic and a new phenomenon in Iran [11]. The movement to e-Government, at its core, is about changing the way people and businesses interact with government. It only makes sense to find out what they want, expect, don't want, and worry about [2, 19]. Therefore, in this section, answer to the first research question of the thesis is given.

In Iran, e-Government and its progress is not just communication between Iranian citizen with government and government with government, it is however "viewed as a way to transform and improve the political, economic, and social relationship that citizens and government can have with one another" [4]. Iranian government and authorities realized that for them to be able to have a successful e-Government progress, the managers in the government agencies should be able to deal with e-Government challenges in an effective manner [39].

Since late 1999, Iran has been seriously active in e-Government plans, strategies, and activities [2]. During recent years Iran has significantly improved in this field. From the effort of government authorities to the outside government expertise, and skilled human resources, e-Government of Iran is now more accurate and precise on the services they are offering to citizens and the activities it supposed to perform. Almost all Iranian ministers and government organizations have designed and implemented their websites to render their services electronically as part of e-Government development and also most of them are eager to have their sites in English language as well [4, 11]. It is worth to mention that regardless of all historical, political, and economy conditions Iran had experience during last

decades and still experiencing today, government and the people of Iran have showed their innovation, skills, and ability for improvement [11].

In the past few years, Iranian government allocated increased budgets to public organizations and state companies to develop IT industry. Iran in its five-year development plan seriously started to provide the government family with the specified annual budgets for ICT [11, 35]. “It was in 2001 when the first considerable budget, about US$160 million, was allocated to the expansion of the ICT industry” [11]. This budget has been increased annually and almost three-fifths of this budget was considered for hardware and software equipment as well as a commercial comprehensive information network, while the remaining was spent on employment generation through IT [11].

To understand how Iran is progressing in e-Government, it is worth to point the result of UN e-Government survey. Economic and social affairs office of the United Nation Organization issued a report entitled UN e-Government survey 2008 and compares the situation of countries in terms of e-Government readiness. For this reason, an e-Government readiness index has been designed which includes three sub-indexes namely web measure index, infrastructure index and human capital index .According to this survey, measures of mentioned sub-indexes for Iran are about 0.26, 0.18 and 0.79 respectively. It makes the total measure for Iranian e-Government readiness index equal to 0.41 and Iranian ranking among 192 countries is 108” [11]. Although the measure for Iran e-Government readiness has been improved during the last three years (from 0.38 in 2005 to 0.41 in 2008), but the ranking of country has been decreased from 98 in 2007 to 108 in 2008 [11]. It shows Iran speed toward e-Government is less than the world average [11, 35].

In addition, for Iranian government to be successful in fully implementing e-Government, e-Government action plan was defined and arranged by the Management and Planning Organization (MPO) of Iran. This action plan was approved by the Supreme Administrative Council in May 2002. This action plan mentioned that all different government organizations should achieve and

complete e-Government projects to help government to fully implement e-Government [11, 19]. More about these action plans are explained in section 5.9 of this thesis.

5.3. E-Government Service Examples in Iran

This section explains examples of implemented e-Government services in Iran. Government of Iran and the authorities are now more eager to further focus on and achieve the ICT applications and technologies to establish as efficient interaction between government and citizen as possible [4]. This is worth to mention that "If e-government is to be truly transformative of government in terms of citizen participation and engagement, then e-government must be citizen-entered in its development and implementation" [21].

In Iran, almost all higher education schools like universities are applying e-Government. Online registration and enrollment are done through universities and government websites. Tuition fees are paid online. Most university exams are being held online, and results are published online. Foreign exams such as IELTS and TOEFL can be registered and exams can be done through government websites. A new service is available by 2010 that allows students to buy university food ticket online through the university home page. Once purchase is performed, students are provided with a ticket in which they can give it to the cashier at the university restaurant. Almost all university websites are open for online suggestions and discussions. These discussions and suggestions can also be sent to the government responsible organization. Students can visit the website and register with their university information and leave a comment or suggestions about a particular university or a university professor [19].

Almost all Iranian banks have provided their customers with the card payment services focusing on cards with debit function and ATM services to challenge the problem of heavy branch traffics. Bank customers are using their own bank card to pay for their store shopping, online shopping, bill payment, and other services like deposit and withdrawal [19].

In Iran, almost all banks are offering the services of online banking to their respective customer who owns an account. Customers are able to benefit from online account through bank website. Monitoring transactions, depositing from the account to the other account, withdrawal from the account to the other account, paying government bills and taxes, and also making request for transaction report in a form of .pdf format are the services offered to the banks respective customers. Furthermore, all the banks in Iran and their systems are connected to the central bank in Tehran.

Use of e-Government services in hospitals, health centers, and clinics are now more visible and tangible. This is now easier and faster for patients to visit doctors, get admitted, and buy medicine from these medical institutions. Payments have become more efficient and faster when its online, doctors' appointments are made faster and flexible through websites, and patient's discharges are now easier than before when every charges related to the patient is computerized. On the other hand, health insurances are easier to be obtained and used when it's required.

5.4. Perspective of E-Government in Iran

The movement and improvement in the direction of implementing of e-government in Iran has recently received the attention of the government authorities and policy makers [2]. Therefore, the importance and necessity of taking an adaptive approach in its definition, development, and application as an experienced and recommended approach is realized. Hence, providing a clear definition for e-government in Iran to include its specific cultural, social, and political characteristics, and also its actual and potential position with regard to access to science and technology, will be an important measure in ensuring its success [2, 19].

E-Government in Iran is perceived and consider as a “major weapon in the phase of leaping to a new performance level” [2]. A successful e-Government in Iran can have the following perspectives:

Table 11. E-Government Perspectives in Iran

E-Government Perspective in Iran
Reducing the operations cycle time [2]
Responding to impatient and demanding citizens in receiving quality, cheap, and immediate services [2, 19]
Satisfying the government staff, who themselves suffer from the shortcomings of the systems [11]
Increasing the level of effective and efficient business interaction within the country [6]
Engaging citizen to e-Government services and convincing them about the usefulness of these services, by offering them the right education and training [41]
G-to-G systems improvements which have the responsibilities of adopting and applying the information and communications technology to the government’s organization, would provide sufficient support and capabilities for managers and executive officials in making decisions, facilitates the improvement of the structure and performance of executive agencies of the country, and improves the productivity and performance quality of the government as a whole [2].

As argued before, the use of new information and networking technologies in inefficient agencies and organizations cannot be considered as e-Government since this matter could result in reverse effects by only magnifying their pitfalls and creating new and more problems for them [5].

5.5. Implementation of Government Electronic Administration (GEA) System in Iran

The implementation of a Government Electronic Administration (GEA) network is the main step towards the projected e-Government. GEA is the main component of the G-to-G system. GEA provides the foundation required to monitor and support the G-to-G system in particular, and to enhance the capacity of government in policy making in general, through various mechanisms, such as developing and creating conceptual models, initiatives, physical and communication infrastructure, software, situation analysis and evaluation of the level of readiness, and preparing the cultural grounds [2]. To better understand GEA concept in Iran, we will view it in two levels [2, 6, 34].

Micro/detail level activities such as suggestions flow schemes from ministers and affiliates towards the cabinet, evaluation of suggestions for their feasibility and practicality, and announcing the results by decision-making agencies can be named as examples. These activities are improving the performance level of the government offices to better perform their duties. Each of these activities may be broken into subsequent layers, such as electronic comments and suggestions system, or decision support models for occasional crises or issues such as employment. At this level, the e-Government is aimed at improving the government's performance in accomplishing specified duties, reducing the time of conducting tasks, publicizing received suggestions from government agencies, and also enhancing the accuracy of the decisions made.

However, macro level is focusing on the communication between government and government organizations, offices, and staff. Communications between ministers and the cabinet, and communication among all government organizations and agencies and the staff. Therefore, this level of communication will improve the work processes of the government and the offices stretched to government operations. Therefore, effective communication can be the real meaning of a successful e-Government.

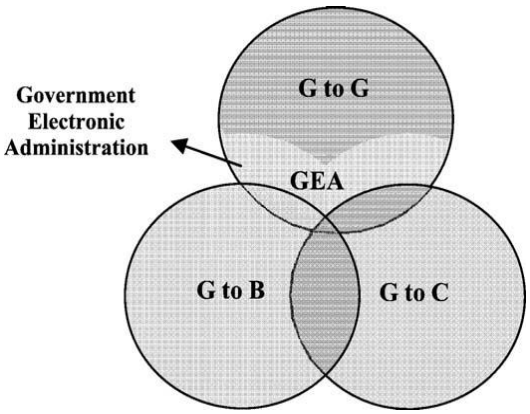

Figure 4. Position of GEA in E-Government [2]

For GEA to better support G-to-G operations, following implementation plans are taking place for GEA in Iran [2]:

Table 12. GEA Implementation Plans in Iran

GEA Implementation Plans in Iran
Increasing access to information
Government's employees' attachment and involvement
Creating the possibility of sharing experiences
Transparency of issues and problems
Increase in operations speed
Preparing the grounds for fundamental improvement of government in a bottom-up process
Integration and better communication of organizations/agencies
Possibility of benefiting more from decision support systems
Improving the government's capabilities in policy making and better management of government agencies
Setting the foundation for the development of electronic commerce in the country

5.6. Elements of GEA in Iran

In section 5.5, it was discussed that, G-to-G system and relationship between government parties have a huge importance on the success of the e-Government activities in Iran. It was also highlighted that GEA can support the performance of the G-to-G systems and communications. Hence, for GEA to be fully achieved, GEA elements should be smartly identified by the government authorities. Elements of GEA are network and hardware, system and software, decision support system, laws, regulations, rules, and organization and management of the network which are briefly discussed below [2]:

Network and Hardware which refers to the establishing electronic communication between government agencies requires their willingness to join the network and feeding and updating their information onto it. For the agencies to trust the network and join it, a secured, fast, attractive, and economic network is needed. In this network, the government agencies are linked to communication centers through leased private lines. They can also be linked to other centers through the allocated equipment in these centers.

However, without a proper system and software, government agencies communication through network and hardware is not well established and performed. Therefore, set of effective and efficient system and software to support the communication is the essential.

Foremost, at the core of all government activities and performances is the accurate and efficient decision making. Therefore, making decision is the most important function of the government. Information production and management is not leading to the right decision making. Hence, the decision support systems in the GEA are one level higher than ISs with the aim of directing information to decision making.

But, development of e-Government and its components must be supported and stand by general laws, rules, and regulations of Iran and the Islamic ideologies and must also comply with international laws and regulations.

Therefore, reaching the abovementioned goals requires the insertion of extreme measures in planning, organizing and coordinating the efforts, and responsible offices and organizations in the government. Hence, organization and management of the network is very essential.

5.7. Successful GEA Implementation Requirements for Iran

Implementing the GEA, having three main characteristics of “complexity, broad scope, and diversity” [2], is inherently difficult and complicated. The requirements for successful implementation and accomplishment of GEA in Iran are organization, planning, contract, financial resources, technology, time factors, cultural issues, and education and human resources which are briefly discussed below:

To manage GEA and to be able to improve it, a well-organized, organization model is needed. Having enough experience is just not enough for organizing the GEA tasks and responsibilities [2]. Not a well-organized GEA projects, will lead to a breakage in the continuity of the GEA development process. Therefore, proper organization model should be proposed before establishing the GEA project [2, 12].

However, Implementing GEA contains several complex and interrelated activities and projects in different part of the country. For GEA to be implemented, all the GEA activities and projects should be well planned [2]. This is not easy to perform the efficient planning to GEA implementation. Factors such as, size of the projects, security, time, budget, human resources, and cultural barriers are adding to its complexity and makes the planning even more complicated [2, 12].

On the other hand, implementing GEA system in Iran requires implementing and completion of various projects in different areas of the country [12]. Thus, “Providing the required legislation, human resources, expertise, funds, and control

mechanisms for this purpose need the immediate attention of the authorities" [2]. By the support of these government rules and regulations, e-Government authority can now assign these GEA project plans to private sectors with the government role in controlling the process. Therefore, an appropriate, efficient and clear contract between parties is must [2, 34].

Aside from that, GEA alone is a big project to be implemented. Financial resources for this timely implementation should be well planned. With not enough budgets allocated on this implementation, GEA will lead to breakage in the continuity and completion of the GEA implementation process [2, 32]. "Despite significant budgets allocated to this project by the government, the realization of the funds, and release of them, has been a problem that is partly related to the shortcomings in the state's general financial management systems" [2].

Furthermore, having and choosing the right and appropriate technology for implementing GEA in Iran is very essential for GEA [2]. The technology should be updated and upgraded. The selected equipment, hardware, and software supporting the technology are having the priority [11]. The technology chosen should be highly consistent and reliable and should include the possibility of upgrading and further development [2, 11]. In terms of the government's policy for preparing the required infrastructure for the development of the e-Government, the major approach has been to invest in the development of the country's communication networks and systems using the fiber optic technology to facilitate fast data communication [5]. However, a secured communication technology should be established to protect the government and citizen information [2, 4, 39]. To do this separating the network of government from citizen can well support both government and citizen information and communication.

As a result of all the e-Government efforts, planning, and activities, e-Government is developed to respond to the needs of the society and the country [2, 33]. "If these needs are not fulfilled within the acceptable time period, they will become outdated" [2]. When a particular need is being planned as a new project, starting time and ending time of the project should be précised [32]. However, they may

be some barriers that affect the planned schedule, but this should not be the reason to have a long delay in the project implementation [4]. So, the government authorities should have a good and applicable time frame for the project implementation.

Though, success in operating e-Government services demands close consideration of the cultural background of the society and its social aspects [36]. Understanding and accepting these social and cultural barriers is very essential in terms of determining the people readiness for accepting such services that result in changing in systems [2]. There is an apparent conflict between the existing policies of the government for the development of the e-Government and some of the unresolved political/cultural issues stemming from the ruling system [2]. The main difference seems to be of a generic type for many of the developing countries related to their move towards open and democratic societies. The particularities of the Iranian society and its religious ruling system differentiate it even from other similar examples, which suggest a severe need to take certain measures in the adopted policies in order to resolve the situation for the e-Government to be realized and appreciated [2, 12].

Therefore, to be able to offer the services on time and allowing people to benefit from these services skilled and educated human resources is required [4]. Therefore, establishing the required education centers and educating people is very sufficient to be able to train and have skilled and reliable human resources.

5.8. E-Government Maturity Level and Status in Iran on 2002

Before discussing the e-Government maturity status in Iran, it is worth to briefly discuss what the e-Government maturity status means? “The terms “maturity” and “immaturity” are often used to characterize the state of a given level in a continuous process” [42]. When it comes to e-Government, it is “The level of sophistication in which countries are using the Internet to deliver quality information, varies considerably” [20].

Four maturity stages were defined by Andersen and Henriksen (2006) which are publishing, interactivity, completing transactions, and delivery [42]. Skiftenes (2006) has also proposed four maturity stages which are catalogue, transaction, vertical integration, and horizontal integration [43]. Furthermore, United Nations (UN) has proposed five maturity stages when implementing e-Government [20]. Here, I will briefly discuss these five stages.

Emerging, enhanced, interactive, transactional, and seamless are the five e-Government maturity stages that were proposed by UN. E-Government is said to be in the emerging stage when government and government authorities are deciding to start implementing e-Government and few services by establishing limited and few independent official government sites. In this stage, the amount of information that is provided to the service users are very limited and users can do very basic interaction with government through these websites. Therefore, in this first stage “information is limited, basic, and static” [20]. This follows by the second stage which is called enhanced. In this stage government increases the number of government official sites, therefore, information are now becoming “more dynamic and content and information is updated with greater regularity” [20]. Hence, more information is provided to the service users, and more interaction between service users and government can be achieved. The next stage is called Interactive stage. In this third stage, service users can then download forms, contact with authorities and officials, and make request for an appointments all through these government sites. Therefore, users can have greater communication with the government authorities. E-Government moves from interactive stage to transactional when the service users can deal with payment issues. Therefore, they can pay for services, and perform and benefit from online transactions. The last stage of UN e-Government maturity stage is when e-Government is considered to be in the seamless stage. This is when a total and complete integration of e-Government functions and services are fully available to the users. In this matter, government authorities has fully implemented e-Government services and reached to the point where maximum level of citizens, businesses, and other government organizations satisfaction is made.

Now that a short discussion about the e-Government maturity levels and stages were given, e-Government maturity status in Iran can then be studied. The only scientific article which I was able to find which has discussed the maturity status of e-Government in Iran is for the year of 1999 to 2002. However, the situation has been changed because of dramatic increase in top manager's awareness regarding the importance of ICT, and e-Government and the invaluable benefits of it to people, businesses and government [20]. Therefore, I can give more discussion about the e-Government maturity status of Iran in the discussion section of this thesis.

As a result of Iran government performances, on 1999, Iran government authorities have shared a TAKFA and have allocated 1 billion dollars for more than 100 ICT and e-Government projects [20, 33]. Iran government then established e-Government objectives, strategies, rules and regulations, and plan for e-Government implementation [32, 33, 34]. All these initiatives, policies, strategies, and plans dramatically facilitated the growth of e-Government after 1999 and TAKFA implementation [20, 32]. As TAKFA has been more discussed in section 4.6; after president Khatami who was the initiator of TAKFA; TAKFA has stopped functioning after the end of Khatamis' period [32, 33]. However, this break down of TAKFA was not caused by the disqualification of TAKFA to continue, but the main reason was the changes in the country when a new president has set new rules.

Ghasemzadeh and Safari (2002) had visited all of the existing government websites very carefully, and conducted some interviews with experts of ministries and five top organizations to be able to evaluate the level of each e-Government applications in those websites based on the United Nations e-Government maturity. As the result to their visit and interviews in 2002, they have founded that in terms of G2C, 24 %of the agencies do not have any websites, 72 %of the agencies had Emerging websites that could only offer limited amount of information to citizen, 4 %had Enhanced websites, and none had Interactive websites. When it comes to Transactional and Seamless, they were not able to find any existing websites, which it means that no government service and online

payment was offered through the government websites [20]. Although, G2G, and G2B due to their nature were not available and accessible to public, therefore they were not able to investigate their status in different government agencies by visiting their websites [20]. This much effort and improvement was the result of TAKFA from 1999 to 2002.

However, termination of TAKFA in 2002 was not the end of the world for ICT, and e-Government implementation and improvement in Iran. Until then, Iran has taken significant steps toward implementing and improving e-Government, government official websites, government organizations websites, and e-Government quality of services. More discussion about these achievements is given in the discussion section of this thesis.

5.9. Iran E-Government Action Plan

The Iranian government action plan for implementation e-Government projects by different agencies was prepared and organized by the Management and Planning Organization (MPO) and it was then approved by the Supreme Administrative Council (SAC) in May 2002. In the approved document, actions to be taken were mostly put in five categories which are shown in the table below:

Table 13. E-Government Action Plan Categories which was Prepared by MPO and Approved by SAC in May 2002

E-Government Action Plan Categories which was Prepared by MPO and Approved by SAC in May 2002	
	Automating general processes like office automation, paperless environment, human resource management systems like personnel and financial systems, etc [11]
	Applying IT to re-engineered agency-specific procedures (work flow) across the nation for a total of ten procedures each year. The main criterion for selecting these procedures is the importance of the mechanisation of procedures in providing greater majority of citizens with better services [11, 19]

	Requiring all governmental agencies to connect their LAN to the Internet and to create their websites by early 2003 [11, 36]
	Creating a citizen portal by 2004 through which governmental agencies' information and services might be assessed [11, 36]
	Selecting IT courses and specifying their contents by all governmental organisations so that their employees can take these IT courses [11]

Each of these action plans were designed and planned to act as a bigger picture for government authorities to be able to identify and target the objectives, plans, strategies, initiatives, and policies toward implementing e-Government. Therefore, each of the mentioned categories contains its own plans, strategies, initiatives, objectives, and policies supporting government authorities focusing on the approved and targeted plans and objectives.

5.10. Summary

This section summarizes the “E-Government of Iran in more detail” section of this thesis. Iran has officially started to establish and implement ICT centres named TAKFA on 1999. The main objective was to implement more ICT applications and e-Government services which can increase the quality of services and delivery to citizen, businesses, and government organizations. From then till now, Iran has achieved many ICT and e-Government development. Iran could achieve this level of improvement by establishing an appropriate and suitable e-Government strategies, goals and objectives, action plans, rules, regulations, and policies. On the other hand, GEA system in Iran had a significant and important role in establishing and implementing e-Government services and increasing the level of government interactions with the citizen, businesses, as well as government organizations. However, for a successful GEA system, GEA requires effort of skilled human resources and quality and availability of other technical elements which were discussed in section 5.7. Though, the level and status of e-Government maturity in Iran can not be proposed in this stage of the thesis due to the lack of literature reviews about this issue. More discussion about the

maturity status of e-Government in Iran will be given in discussion part of this thesis.

6 OBSTACLES OF IMPLEMENTING AND IMPROVING E-GOVERNMENT IN IRAN

E-Government implementation and improvement in Iran has recently received the interest of government authorities, policy makers, and businesses [36]. There have been many e-Government initiatives for the sake of obtaining benefits in recent years [39]. Therefore, e-Government in its current level is promising some striking opportunities to improve the businesses performances, citizen service quality, and government duties. However, this vision is not without a series of serious obstacles [36]. There are many problems and obstacles for e-Government establishment process in Iran [11]. However, overcoming these obstacles will take a special kind of leadership who is eager to get involved and initiate changes by having on hand the factors such as budget, and skilled human resources [36].

6.1. Obstacles

This section of the thesis is providing the answer to the third research question. Hence, in order to identify the obstacles of implementing and improving e-Government in Iran for this thesis, all related sources of information about the obstacles that could have been found were reviewed. Therefore, nine different categories of these obstacles are categorized in table 14. Moreover, through my comprehensive relevant literature reviews and studies, I have found that government authorities of Iran realized many obstacles facing with the implementation and improvement of e-Government in Iran. However, some obstacles have been solved and some other obstacles are still visible. Obstacles that are already solved are shown by having “(Over)” at the end of the item. Hence, the obstacles are identified in the following table.

Table 14: Obstacles

Obstacles Categories	Obstacles
IT infrastructure	Low internet connection, and no fast and easy accessibility to internet [4, 11]

	Insufficient PCs of citizen and government organizations .Still in use [11] Unavailability of government websites (Over) [36] Limited availability of some government websites [36] Limited accessibility of citizen to internet networks in which result decrease the users' motivation to expand the browsing experience [4] Lack of efficient banking system for having e-Payment [11] Telecommunication infrastructure for connecting schools and universities to the national internet and network is not satisfactory [4, 11]
Lack of IT skills, education, and knowledge	Shortage of computer literacy among the citizen and government employees [4] Lack of IT and ICT education centers for citizen and government employees (Over) [4, 32] Lack of IT and ICT expert for educating people in education centers (Over) [4, 11] Unfamiliarity of citizen and government employees having high skills in English language [11] Lack of enough IT motivated forces for citizen and government employees [4, 19] Lack of adequate IT and ICT education in elementary schools, high schools, and universities [4, 6] Inadequate understanding of citizen and government employees of the usage of e-Government [4, 6, 11] No fresh, young, and knowledgeable university graduate in placed of the old and outdated government employees [4, 11] Lack of authorized centers to observe and evaluate the IT, and ICT training Labs [32] Lack of Farsi language websites and applications [4]

Legal	Lack of strong security policies and laws [4] Lack of strong regulations to support e-Government implementation [4] "There is a lack of knowledge of copyright law, and its application" [32] No enough allocation of budget for meeting the expenses and requirements (purchase suitable hardware and software) for implementing e-Government and developing it [4, 11, 32] No strong strategy and budget allocation for meeting the expenses of establishing fast and reliable internet network in the international organizations [4, 11, 32] Government weakness in financing training courses for the government employees [32, 36] Unavailability of people to have a personal private credit cards (Over) [11] "Lack of law for respecting human rights" (Over) [4] Lack of vast investment needed for the establishing more ICT centers and applications in addition to banks systems in order to establish efficient e-Payment [4, 11, 32]
Security	No security of citizen information in e-Government (Over) [4, 6] Lack of adequate codification of the critical information and using digital signature [6] lack of enough security facilities such as login, filtering, and authentication (Over) [6] Lack of citizen, and government employees network security experience [6, 11]
Social and cultural	Lack of citizen and government employees confidence in dealing with e-Government services and transactions

	[4, 11] Unwillingness of supreme management to accept new initiatives for e-Government (Over) [11] Lack of high level managers for making an adequate atmosphere and environment for implementing e-Government (Over) [6] Resistance of the government employees against the changes, specially with new concepts [4, 11] Lack of enough government employees and managers ability dealing and accompanying with the high speed of IT changes [4, 19] Citizen traditional ways of claiming their government services (Over) [6] Government employees paper based habits and resistance against paperless jobs [4, 32]
ICT applications among government agencies	Still, there is lack of ICT master plan in some agencies [6] Lack of enough and adequate web-based applications [32] No large and suitable shared database and supporting tools (Over) [6] Improper IT responsible body in organizational chart of agencies (Over) [6, 34] Lack of appropriate support for the information which are provided on the agencies' website (Over) [6]
Economy and society	High cost of ICT and IT training to citizen and government employees [4, 6] High cost of hardware and software [6] The lack of training facilities in rural and urban areas (Over) [6] Lower national income compare to the developed countries [6]

Workforce	Low salaries for the IT and ICT expert people [6] Expert immigrants and educated graduates leaving Iran to abroad [6]
Software and hardware market, export and import	Lower quality of in-house hardware due to the lack of technology and international technology and hardware ingredients exchange [4, 6, 32] Lack of essential expertise among in-house hardware producers [6] No affordability of government to purchase costly expert systems and software [6, 11] Lack of adequate importing and exporting hardware and software [6]

As can be seen from the table above, Iran government has been able to overcome with some of the obstacles that were not allowing the authorities to implement and improve e-Government in Iran. But, until now, many obstacles and barriers remained unsolved. It can be seen that the most striking obstacles are related at first to the lack of IT skills, education, and knowledge of government authorities, employees, and citizens, and at second to legal issues within the country, this followed by social and cultural issues, and lack of appropriate and efficient IT infrastructure and so on. This can be resulted that government authorities should consider more of the e-Government plans and strategies that can resolve these obstacles.

6.2. Strategies to be Followed to Minimize the Obstacles

“The successful formation of e-Government depends on the expertise of the authorities regarding the nature and features of e-Government and the successful implementation of such projects” [37]. Conversely, there are many obstacles exist for Iran to have the successful formation of e-Government and its implementation and improvement. However, Iran can follow strategies which will lead to

minimizing the criticality and essentiality of these obstacles on implementing and improving e-Government in Iran. In section 6.2, Obstacles were categorized and defined. Therefore, strategies can be given in basis of the categories defined in section 6.2. Strategies are as follows:

Table 15: Strategies to the Obstacles

Strategy Categories	Strategies
IT infrastructure	More IT activities in IT department of the organizations [6] More accessibility and availability of servicing citizen and businesses through government and company websites [4, 32] Faster and more reliable internet connection [4] Access to more expert IS analyst, IT, and network employees [11, 22] Increase the affordability to offer faster internet connection and network access [11, 32] Increase the availability of broadband access [11] Easier access to electronic mail [11] More and easier website availability to business promotion [22, 32] More use of internet technologies by the government and government organizations [4, 11] Increasing the quality of internet connection, and connectivity to network [6] Increase the sufficiency level of the government and government organizations computers [6] Improve the efficiency of banking system for e-Payment [6]
IT skills and education, and knowledge	Increase the citizen, government and government organization employees awareness toward IT and ICT

	[4, 11, 6] Allocate budget for establishing IT and ICT education centres [6] Diversity of employees IT and ICT educational qualifications and skills [6, 36] IT and ICT training courses for government employees and increase the familiarity of employees to e-Government concepts [6] Increase the availability of online sources and information for self study and self training [37] Increase the number of young graduate skilled employees [6, 22] More use of IT and ICT applications [6, 11] Observing and evaluating functions of the IT, and ICT training [6] Labs by the government authorised representatives [6] Increase the Farsi language websites for more training [22, 32]
Legal	Secure and strong rules, regulations, and policies [32] More secured ways of guaranteeing the privacy of the citizen, businesses, and government data [32] More strong laws protecting human rights [6]
Security	Increase the level of user satisfaction toward the user data security [6] Codification of information and using digital signature [32] Increase the citizen, businesses, and government organization awareness regarding to obtaining network security [4, 32]
Social and cultural	Increase the attitude toward IT and ICT [4, 11] “Confidence-building through education and

	promotion of managers' culture and awareness" [4] Announcement of a clear vision of IT, ICT, and e-Government development in Iran [37] Increase the use of mass communication channels to increase the awareness of the citizen about the benefits of IT, ICT, and e-Government [6, 11, 32] Holding seminars and workshops about the advantages and benefits of IT, ICT , and e-Government [32] Increase users' innovativeness which means "acceptance of a new idea" [22] Increase the customer engagement to benefit from financial services through the internet "innovation in retail service delivery" [22] Positive perception about use of technologies [6] Familiarity of citizen, businesses, and government organization with the IT, ICT and e-Government benefits [11, 19] Making citizen and employees belief on what IT and ICT can do to enhance their everyday task [37] Upgrading the employees about the IT and ICT development and a new technology [37]
ICT applications among government agencies	Using variety of software and ICT applications in the agencies [6] Applying different databases in the agencies [6] Existence of Local Area Networking (LAN) in the majority of government agencies [6] Existence of Wide Area Networking (WAN) in some agencies "The linkage between government agencies and internet" [6] Providing information services throughout internet and mass communication channels [6, 11]
Economy and society	Youth tendency to use computer and internet [6]

	Equal distribution of income among the society [6] Increase the national income [6] Increase national communication in order to exchange technology and knowledge [6, 22] Decrease the level of poor people, and increase the internet accessibility by every individual [6, 37] More national transactions and businesses connections [6]
Workforce	Increase the training centres and institutions [6] Increase the salary in IT and ICT areas [4] More IT university courses and training [19] Admission of more IT students [6] Satisfying the IT and ICT experts inside the country in order to make them stay in the country [6] More IT and ICT experts in the businesses, and government organizations [6]
Software and hardware market, export and import	More software training and course engagement for students [6, 32] More software producers in the country [6] Increase the budget and foreign currency to import software from abroad [32, 36] Lower the computer hardware and software accessories costs [6] More hardware technicians training and more brand branches [6]

As was explained in section 6.2, obstacles exist which are also preventing the government authorities to be able to expand, implement, and improve more of e-Government services. Therefore, strategies are being set regardless of any obstacles in order to be implemented and act as the supporting tools in the implementation and improvement of e-Government. The strategies listed in the table above are the bases for the obstacles to be resolved.

6.3. E-Government Guidelines and Solutions to Obstacles

To achieve an effective e-Government, what is required is the “broad combination of functions, coordination and activities concerning intense planning and control” [19]. Government and government organizations who has the full control of the central management system should establish such functions, coordination, activities, and processes [4, 19]. Therefore, government authorities, along with the help of government organizations should be able to establish solutions and guidelines to the e-Government obstacles in Iran. Therefore, brief guidelines and solutions are being discussed. Guidelines are as follows:

Government authorities of Iran should be able to have the adequate IT infrastructures. To overcome with the obstacles, large number of IT infrastructure may not be needed. However, having the professional knowledge and skills to be able to select the needed IT infrastructure is essential. Infrastructures used should be highly reliable and upgrading possible. Applying the communication network and facilities, fast and accessible internet connections, and equipping government and government organizations with adequate and efficient PCs are the essentialities [6, 11, 32].

Most importantly, at the core of all the e-Government activities are the skilled, educated, and expert managers, and government organizations employees who are directly interacting with e-Government improvements in Iran. Therefore, educating, and training of the new managers, government employees, and citizen should be done on time. Cooperation with the commercial organizations for holding short and also long terms of IT and ICT educational courses should be organized. On the other hand, offering courses and trainings about e-Government concepts and use of services should be under the consideration of the government authorities. Hence, schools, colleges, universities, and private training centres are the best way of reaching large number of citizen and uneducated people. However, this effort can be very well established with the coordination of the mass communication channels [6, 11, 32].

On the other hand, for legal obstacles, few guidelines can be given .Responsible government body should be assigned to propose copyright laws, security policies, and regulations supporting e-Government activities and future development .In addition, strong laws and policies and security should be established to support the bank card and visa card holders' privacy [6, 11, 32].

Furthermore, the recommended guideline for security issues is to use the digital signature for increasing the security feelings of all the users of e-Government services[6]

But, when it comes to social and cultural issues it is important to point that confidence-building for the citizen, businesses, and the government organizations on using the internet and e-Government services can encourage and enhance them to more interact with and benefit from the e-Government services. Furthermore, "elimination of conservatism morality and encouraging managers to welcome the new ideas and initiatives for making a better and suitable working environment" [4]. On the other hand, holding local and national seminars and workshops about the e-Government and its benefits and advantages for the awareness of managers, government employees, businesses, and citizen can make a big difference on the level of confidence-building, awareness, and e-Government engagement [6, 32].

However, to make ICT, and e-Government work, government authorities should establish effective connections and communications among government agencies in order to increase the level of agencies interactions and information exchange, and employees' relation. More ICT master plan and applications should be developed and used [2]. Appropriate ICT technologies should be used. Therefore, selecting the adequate ICT applications that can be upgraded in future should be considered [6]

In addition, Iran government authorities should start establishing more national communication and relationships in order to improve the economy of the country [32]. Interactions between Iran government with other countries government in order to have gain from competitive advantage, technology exchange, and

information transfer which results in the improvement of the economy which has the direct impact on the development of e-Government in Iran [2, 6].

Aside from above mentioned issues, this should be under consideration that many skilled and expert young educated people are leaving to abroad because of the low salary in Iran [6]. Good and unique projects can produce money [32]. Therefore, by assigning as many as unique projects to those expert and skilled people, Iran can higher their salaries which finally leads to the satisfactory of the mentioned people [6].

Yet, for government authorities to be able to advantage from the international market, Iran government should make more international contracts with countries which are expert at producing software and hardware [6, 32]. On the other hand, Iran government should minimize the strict laws and policies regarding imports and exports of software and hardware [4, 6].

6.4. Summary

This section summarizes the “Obstacles of Implementing and Developing E-Government in Iran” section of this thesis .Implementing e-Government ideas, activities, and projects in Iran requires lots of efforts, proper planning and design, adequate technology, hardware, and software selections, sufficient budget allocation, skilled human resources, skilled and expert managements, and also a high level of motivation and inspiration for citizen, businesses, and government organizations to be technology based. However, Iran has been and still is facing many obstacles and barriers for implementing and developing e-Government initiatives, plans, and services. During recent years, especially after 2002 when TAKFA has been terminated and put down, Iran has become more eager and impatient in further implementation and development of IT, ICT, and e-Government services. This decision and plan for further improvement has placed Iran government authorities in a position and condition that they begin to establish more initiatives and action plans in order to get rid of e-Government

obstacles. Though, many obstacles have been put behind, and some obstacles still exist. But, with all the obstacles and barriers, Iran has never stopped functioning toward improvement and therefore had a significant move toward IT, ICT, and implementing e-Government in the country. This level of improvement has been achieved when Iran authorities established and implemented strategies against obstacles. Based on their current movements, further IT, ICT, and e-Government implementation, and improvement is expected in few years from now.

7 STRATEGIC BUILDING AND THE NEAR FUTURE OF E-GOVERNMENT IN IRAN

"The strategy promotes innovation for new services" [13]. It is obvious that government authorities, government organizations, and businesses in Iran accepted the changes and trying to implement their ideas [18]. Therefore, for Iran and the government authorities to be successful in implementing e-Government and guaranteeing the future of e-Government in Iran, appropriate strategies are essential. Government of Iran is not only considering the current improvement of e-Government, but also trying to stabilize its position in the future government body with playing an effective role in establishing e-Government within the country [11]. Therefore, in this section, the important strategies that Iran government authorities should be able to improve is discussed. However, for the future improvement of e-Government in Iran, some factors which requires extra concentration of the authorities is then studied.

7.1. Strategic Building

The strategy envisages that e-Government services are and will be accessible by multiple technologies such as websites to be accessible from PCs, kiosks, mobile phones (m-Government), digital TV, and call centers [13, 14]. Accessible technologies, services, and ICT applications can confidence, encourage and enhance to Iran authorities to be able to build the appropriate and sufficient strategies for the improvement of e-Government in the country [36]. For the technologies to be available and accessible, government authorities and government organizations should follow the strategies and policies and comply with the guidelines presented in section 6.4. However, the content and substantiality of the guidelines may be revised as technologies developed and also based on the different condition of the government locally and globally [13].

On the other hand, interconnectivity is achieved when different systems of either the same or different modes are physically and operationally linked together to

facilitate transfers across the boundaries between different systems [44]. Interconnectivity can be accomplished when any missing links in each of the physical infrastructure, information, and transport services at the boundaries between different systems can be fixed and completed [44]. Strategies, policies, and standards to facilitate this achievement is essential for government of Iran, government organizations, and businesses in order to fully advantage from interconnectivity in the e-Government systems in order to fulfill their own needs as well as citizens' needs and requests. Managers, government authorities, and government organizations in Iran should establish the fundamentals, prerequisites, and requirements for achieving interconnectivity in their systems [32, 34]. Therefore, adequate interconnectivity can ensure the accessibility and quality of government services to government organizations, businesses, and citizen through the government systems.

Additionally, interoperability is generally defined as two or more than two systems to operate and function effectively and efficiently together to be able to fulfill the customers (citizen, and businesses in this thesis) requirements, needs, and requests [44]. Establishing common standard and infrastructure to enable interoperability across government organizations and departments with the support of policies and standards will ensure that government organizations can communicate electronically with other government organizations, businesses, and citizen. This can be achieved though wide adaption of IT, ICT applications and technologies, Internet, and World Wide Web (WWW) technologies for all government IS [11, 13]. However, achieving interoperability is not clear from any obstacles in terms of technology, organisational problems and powerful technology vendors [45]. Thought, Iran government authorities, government organizations, and businesses should implement interoperability in organizational and business domains of IS to be able to benefit from the true interoperability advantages [45]. Adequate interoperability achievement can ensure the accessibility, and quality of government services to government organizations, businesses, and citizen through the government systems.

7.2. Making True E-Government Happen in Iran

As has been discussed in section 6 of this thesis, Lack of IT, ICT, and managerial skills are of the obstacles and barriers for the improvement of e-Government in Iran. Lack of citizen skills and knowledge is caused by the lack of education centers and also inappropriate education. Government authorities and government organizations managers should be expert, skilled, experienced, and educated to be able to establish strategies in order to make the e-Government services accessible to citizen. The level of satisfaction in accessing and using the e-Government services by citizen can vary from one user to another according to the level of education. Therefore, citizen education and skills in the field of IT, ICT and e-Government can be very essential and critical for the improvement of e-Government. However, “it is important to take time and consider how the citizens feel about the progressions” [18]. Hence, government authorities and government organizations additional attention and concentration should be established in terms of improving in the citizen education and skills on how to advantage from and use IT, ICT, and e-Government services [2, 4, 11, 13].

For e-Government projects and implementation to success, a strong leadership skill is needed. Most e-Government applications fail when the leaders and decision makers have no full understanding about the importance of the projects and thus do not place the full weight and power behind it [13, 33, 37]. In general, leaders should have a comprehensive understanding about the strategies, e-Government principles, project management, market opportunities, role of innovation, change management, and budget management in order to be qualify to direct the e-Government projects and achievements [13, 19, 40]. Thus, leadership is another factor that government authorities of Iran should give double attention in order to implement and develop qualified, efficient and satisfactory e-Government projects and services in the country.

ISs are the necessary tools for e-Government implementations and improvements. Without a proper and adequate IS, e-Government projects will fail. Appropriate ISs and business systems should be selected in order to facilitate them with

updated technologies, software, and hardware. E-Government projects and services require efficient ISs and business systems which can make the e-Government tasks easier, increase service quality, minimize service delivery, and increase users' satisfaction. Therefore, Iran government authorities are required to give more attention and improvements to their ISs, and business systems in order to improve their e-Government services and tasks [13, 15, 32, 33].

It is essential that e-Government projects will be effectively implemented. To be able to do this, full understanding on what is going to be achieved in this implementation is very critical and important. The implementation of the e-Government projects and services should be in a way that it does not lead the project or services to have a faulty operations. ISs, IT infrastructures, and technologies should be carefully selected, designed, and implemented in order to improve the e-Government implementation. Effective implementation of the e-Government projects and services will not crashed and revised unless for future upgrading, updating and improvements [12, 13, 15]. Therefore, Iran authorities should then increase their effort, skills, and attention on making as effective implementation of e-Government as possible. This will also help to reduce the cost of government when effective implementation is performed and there is no need to spend money on reimplementing [32].

Trust is probably the most important aspect of e-government. Without trust, citizens will not go into government websites, and will not register into government services, and thus not participate in e-government. If one doesn't believe that his/her view points are being seriously considered or that the government is just paying lip service to them, then their future participation will be lost for a very long time. As a result, government will have to make tremendous investment to regain that trust. Therefore, government authorities in Iran should increase the level of citizen trust on using e-Government services online to be able to improve their services [13, 18, 19].

7.3. Next Steps Toward the E-Government Improvement

This section is giving the answer to the last research question of this thesis. E-Government in the near future is going to be strong in the following factors.

IT and ICT education and training are currently given in the high schools and universities [19]. Few years from now, these education and training will be also available in the wider range. Perhaps basic education and training are also provided to elementary schools and also to kindergarten as a playing tool for the children. More technical and advanced education and training will be offered to the government organizations, businesses, and citizen. IT, ICT, and e-Government short free courses will be obligatory for citizen of higher age. More IT, ICT, and e-Government training centers will be established to welcome citizen to learn and increase their familiarities in these fields. Therefore, it is expected that by few years from now, people of Iran are familiar and trained in the fields of IT, ICT, and e-Government in order to advantage from the services e-Government of Iran is providing them [4, 19, 33].

ICT is at the core of Iran next national development plan [32, 33]. More IT and ICT achievements are planned to increase the e-Government services availability, accessibility, and quality. More ICT centers will be established in villages to support and meet the citizen government needs and requests [9]. New technologies are engaged with the ICT applications and e-Government projects and services [4, 36]. More professional software will be designed and programmed in addition to variety of new and upgraded hardware to facilitate the government performances to provide quality services and faster service delivery to the citizen [4, 6]. Much more faster and reliable government, businesses, and citizen networks will be achieved. Secured, updated, and more databases are planned to efficiently hold government, businesses, and citizen data and information [6]. Furthermore, internet connections are getting faster and cheaper, so in near future, internet connection can be available and accessible anywhere free of charge.

Therefore, m-Government would be the next generation of e-Government in Iran. Currently, government authorities are encouraged to start establishing some e-Government services through mobile phones [32]. However, m-Government is not yet implemented, but very few services are planned. Iran has still long way to go to achieve m-Government. Unfortunately, I am not able to discuss more about the status of m-Government in Iran due to the lack of scientific sources.

7.4. Summary

“While the future of e-Government is looking bright, of course there is always “the other side” of
every story” [18]. Building the appropriate strategy, talented and skilled leaders and managers, responsible government authorities, and skills and education of the citizens on dealing and working with IT, ICT, and e-Government technologies, applications, and services, and also technology accessibility and improvement are the essential and significant factors for the future improvement of e-Government in the country. Therefore, Iran government authorities, and government organizations should build their initiatives, plans, and strategies in a way that they can meet these factors and their requirements in order to have a bright e-Government future but not “the other side” of it.

8 DISCUSSION

There are some new and some other issues that were not relatively well discussed in different sections of this thesis; due to the lack of appropriate and enough scientific sources.

8.1. Complementary E-Government Perspectives

Based on my research and literature reviews, I can propose that there are three different complementary e-Governments perspective in which one plays the supportive role to the other one. I will not go in deep to discuss these perspectives, but a brief explanation can be given to present you a better spot on the concept. These perspectives are as follows:

The first perspective is considering e-Government as an Information Processor. Citizens to government interaction can be made when citizens are able to interact with government services and use these services through government websites. To be able to make this interaction work, citizens are sending their information and data to government through the government websites. Government then will take care of these information and data in order to offer as efficient services as possible to the citizens. Therefore, in this perspective, e-Government is taking the responsibility of processing citizens' information and data. Government is also considered to be the processor of the information and data of the citizens and all users of e-Government services. Therefore, after this we can ask how does government function as an information processor?.

The second is to consider e-Government as a function. E-Government is performing various services to citizens, businesses, and government organizations. All the government performances and activities on supporting, maintaining, securing, and implementing e-Government services are considered to be the functions of e-Government. However, e-Government services and functions differ from one area to another. Government and e-Government that

occupies a unique position in society, one that requires the citizen's trust, simultaneously, in the arenas of force (policing, security, and the military), universality (contrary to business, the government has to serve all people equally, even ones in inaccessible places or with debilitating conditions), and privacy (the government has access to sensitive information such as personal finances and perhaps health conditions) [24]. Hence, government and e-Government functionalities may differ from one area to another. For the next level, the question may be how well can government function in practice?

The last perspective is to consider e-Government as an organization. Can one be able to find a better method for engaging a new way to use of e-Government? This part, mainly focuses on how well government can function. At this stage, the tools, knowledge, skills, and technologies to be used to enhance the current functionalities of the government and e-Government performances should be well planned.

E-Government can then be considered as successful, if government authorities can understand, expect, and implement these three perspectives or stages when the idea of e-Government is initiated. However, a variety of different plans and activities are involved in every stage. For instance, for e-Government to be as information processor; processing information and data of the citizens is not the only issue. But, many other critical factors and issues are involved for reaching to the point where government and citizens' satisfaction can be achieved. So, the aforementioned perspectives are the big picture to a successful e-Government. Therefore, for the authorities to be capable of meeting the objectives of e-Government, they should be able to move from one stage to another stage, while all the plans, strategies and activities of the previous stage has already been accomplished.

8.2. Proposed Maturity Status for E-Government of Iran

As has been discussed in section 5.8, maturity level of e-Government is the level of sophistication in which a country like Iran is using the internet, ICT

applications and technologies, IT infrastructures, and human resources to deliver the government services in high quality and fast delivery. Based on the United Nations five maturity stages which was explained in section 5.8, and based on what I have studied, I can say that e-Government of Iran has already passed the emerging, enhanced, and interactive phase of the maturity stage and now they are considered to be in the transactional stage of the e-Government maturity stages. However, still many websites are not fully implemented with these level characteristics, but they are trying so hard to more increase their services and its quality in order to be able to move to the seamless stage. As I can see from their improvements, I can proudly say that in a few years from now, they can effectively move to the last stage. However, obstacles still exists and are challenging.

8.3. Situation of the Country

Consequently, with all the existing economy, political, technological, industrial, and business obstacles, Iran government authorities, government organizations, businesses, and citizen are now witnessing a significant ICT improvement in Iran. Among all the current statistics available in Iran, I could have found one record that shows more than 40,000 villages in Iran are ICT support and equipped to allow the citizens of the rural areas and villages to easily progress their government issues right from their place. To support this plan, ICT development association of Iran, has initiated many ICT free education centers in those villages and areas in order for the citizens to be able to manipulate and make use of these services online. Today, a young school boy is sitting with his over 50 of age parent in the ICT education centers and functioning with the e-Government online services. Still, this is worth to mention that it is not an easy job to get old people along with new technologies. But, Iran government is trying to establish as friendly, easy, relaxing, and motivated education centers as possible to encourage and attract more citizen to join these centers.

8.4. Islamic Ideologies

While Islamic ideologies and sex difference issues are making a big gap in the further and faster improvement of ICT, and e-Government in Iran, other developed countries improvement and development is being witnessed. For me, this has been a big issue to mix Islamic ideologies with the government duties, development of ICT plans, and e-Government initiatives. Islamic ideologies are strongly merged with the government of Iran, and its policies, rules, regulations, laws, parliament, and any other improvement activities involved in the country.
The Islamic ideologies are preventing many expert, skilled, and educated Iranian woman to raise voice. Therefore, they keep silence and not willing to work for the government and government organizations. Many of them are not capable of getting so much involved with all these Islamic ideologies applied in the working environments. Limited interactions with male employees are possible at work . Many of them feel that they are being humiliated by being not that respected as they expect. Men are given the priority in many things, especially when it comes to the working environment of the government, and government organizations.
Therefore, those women who have the potentials and can play a big role in the ICT, IT, and e-Government development and improvement in Iran will then be hopeless and disappointed for staying in the country. Therefore, some who can afford it will go to abroad and immediately get hired and respected for their talents and skills and others will establish their own private business. However, women are given many rights like the right to vote, to participate in the parliament, to become a taxi driver, and to become a minister, but, still there are many lacking rights that has to be applied by separating Islamic ideologies from the government. This is when the government of Iran can freely advantage from all experts of the country.

8.5. Issue of Trust

Aside from that, to be able to implement and improve ICT, IT, and e-Government in Iran, government authorities should first build trust for citizen. When trust is established, government authorities should be then fast approachable when a citizen is willing to share comments and feedbacks or reporting any drawbacks. Government, e-Government, and e-Government services are all established and designed for the citizen. Therefore, government organizations, businesses, and citizen are the one that services are designed for. So, if Iran government authorities are willing to have ICT, IT, and e-Government improved, they should be trusted, available, easy accessible, and open to every comments, feedbacks, requests, ideas, and drawbacks. They should also be fast in responding. Furthermore, E-Mail should be the formal channel of communication between authorities and citizen because; it is in a form of text and can be made as a document.

8.6. People and Technology Advancement

It seems like many young people are now trying to be more technological. Many young people in Iran are having their own laptop, internet connection, and some devices that are closely related to the new technology. High amount of money is being spent on updating and upgrading their devices. More people are becoming increasingly aware of benefits of ICT, IT, and e-Government in their life. As a result, majority of young people are now willing to do all their tasks online.

However, there are still many challenges, barriers, and obstacles for the government of Iran to fully implement the true e-Government. But, as technology advances, people are getting much more familiar with ICT, IT, and e-Government services. By time passes, citizen can operate more e-Government services. Therefore, they slightly changed mind by feeling the advantages of ICT, IT, and e-Government. Furthermore, government authorities, businesses, and government organizations will sharply increase in their ICT, IT, and e-government initiatives, plans, strategies, and development. More Services will be available online. Effective, efficient, and reliable interaction and relationship will be formed

between government, businesses, and the citizen. As a result, the maturity stage of e-Government will increase from transactional stage to the seamless stage. Therefore, this improvement will continue by the launch of m-Government services.

8.7. Further Research

Further research on the implementation and improvement of e-Government of Iran is necessary. As of this time, still many government websites are not producing enough information, and statistics about the movement of e-Government in Iran. Hence, young and fresh researchers can be assigned to do the research that produces a reliable statistic and information. On the other hand, many obstacles to implement and improve e-Government services still exist. Therefore, government authorities should more realize the importance of research on the field of e-Government in order to solve these problems. Moreover, this would have been a vital step toward improvement of e-Government in Iran, if more research on ICT education, wider access of citizens to ICTs, effective technology usability, security, and management of resources would be done in the near future.

9 CONCLUSION

The goal of this thesis was to understand the progress of e-Government in Iran. However, implementing and developing e-Government in Iran is not free of any obstacles, and barriers. Therefore, defining, and discussing the obstacles and also studying the current and future achievements of Iranian government toward e-Government are the other goals to this thesis. Most significantly, the lack of ICT applications and technologies, IT infrastructures, skilled managers and employees, and political and economical problems; caused Iran government to face these obstacles. But, Iran's progress towards achieving e-Government regardless of existing obstacles and barriers seems to develop successfully, and the evolution and advancement is becoming more dynamic and planned. The answer to a successful implementation of this process lies in the commitment of all appropriate government authorities, government organizations, and decisions makers both public and private such as administrative departments, educational establishments, finance and political authorities, legislators and media. Moving toward a successful implementation of e-Government and computerization of existing systems and services needs fundamental arrangements in order to use the existing possibilities and resources. Achieving this process needs the government authorities, and government organizations effort, expertise, and skills to benefit citizens, businesses, public and private sectors [19].

REFERENCES

[1]. Layne, K., Lee, JW., 2001. Developing fully functional e-government: a four stage model, Government Inform. Vol. 18, No. 2, pp 122-136.

[2]. Sharifi, H., Zarei, B., 2004. An Adaptive approach for implementing e-government in Iran,MSc .Thesis, The University of Liverpool Management School, Chatam Building, Liverpool L69 7ZH, UK, Sharif University Graduate School of Management, Sharif University of Technology, .Sohrevard Boulevard, Tehran, Iran.

[3]. Ndou, V., M., 2004. E-government for developing countries: opportunities and challenges, The Electronic Journal on Information Systems in Developing Countries, Vol. 18, No. 1, pp 1-24.

[4]. Fallahi, M., 2007. The obstacles and guidelines of establishing E-government in Iran, MSc. Thesis, Luleå University of Technology, Sweden, available online at: http//:epubl.ltu.se/1653-0187/2007/052/LTU-PB-EX -07052-SE.pdf

[5]. Ghasemzadeh, F., 2001. Safari, H., "Transition to E-Government: A plan for Iran", Management Knowledge, Vol. 55, pp 252-278.

[6]. Ahmadi, A., Ghazanfari, M., Aliahmadi, A., Mohebi, A., 1999. Strategic Planning for Implementing E-Government in Iran: Formulating the Strategies. Available at: ftp//:ftp.eng.shirazu.ac.ir/Documents/Proceeding/paper/P06147.pdf . [Accessed Sep 2, 2010]

[7]. Mclean Turban., 1999. Information Technology for Making Connections for Strategic Advantage, John Wiley & Sons. Inc.

[8]. Davis, C.N., 2005. Reconciling Privacy and Access Interests in E-Government. The International Journal of Public Administration Vol. 28, No. 7-8, pp 567-580.

[9]. Maggipinto, A., Visconti, E., 2008. A normative approach to democracy in the electronic government framework. IFIP 20th World Computer Congress, Industry Oriented Conferences 7-10 Sep 2008. Milan: Italy.

[10]. Huggins, R., 1997. An Introduction Politics: The nature of state [e-book] Barrie Axford; Gray Browning .Richard Huggins .London, Rutledge, 1997, pp 204-270. Available at: www.books.google.com .[Accessed Sep 3, 2010]

[11]. Sarpoulaki .M., Eslami Rad .A., Saleknia .A., 2008. E-Government concept and spatial information: A case study in Islamic republic of Iran. The International

Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, [e-journal] XXXVII /B4, 19-23 .[Accessed Sep 6, 2010]

[12]. Abdollahi, A. Fasanghary, M .Azadnia, M., 2009. A Foresight based Framework for E-government Strategic Planning, Journal of Software Vol .4, No . 6, pp 544-46.

[13]. Lan, R., 2000. A strategic Framework for Public Services in the Information Age. Available at: http//:archive.cabinetoffice.gov.uk/e-envoy/resources-pdfs/$file/Strategy.pdf [Accessed on Sep 10, 2010]

[14]. Coleman, S., 2008. Foundation of Digital Government. USA: Springer Science+Business Media, LLC.

[15]. Arif, M (2008) "Customer Orientation in e-Government Project Management: a Case Study" The Electronic Journal of e-Government Vol. 6, No. 1, pp 1 -10, available online at www.ejeg.com

[16]. Hovy, E., 2008. Foundation of Digital Government. USA: Springer Science+Business Media, LLC.

[17]. Nikkhahan, B., Jangi Aghdam, A., Sohrabi, S., 2009. E-government security: A honeynet approach. International Journal of Advanced Science and Technology Vol .5, pp .75-84.

[18]. Chen, ET., 2002. E-Government Issues and Practices. University of Massachusetts Lowell. International Association for Computer Information Systems Vol. 3. Available at: http//:www.iacis.org/iis/2002_iis .[Accessed Sep 2, 2010]

[19]. S-Haghighi, B., 2007. The Progress of e-Government in Iran,MSc. Thesis, Blekinge Institute of Technology. Available at : http//:www.essays.se/essay/c8023bf8f7/ .[Accessed Sep 9, 2010]

[20]. Ghasemzadeh, F., 2001. Safari, H., 2002. E-Government Maturity Level: A study about Iran. EurAsia-ICT, Shiraz, Iran .Available at: http//:ce.sharif.edu//~shafazand/WORk-english/pdf/231-3001/E-Government-Eurasia-final.pdf .[Accessed on Sep 3, 2010]

[21]. Centeno C, van Bavel R and Burgelman JC (2005) "A prospective View of e-Government in the European Union" *The Electronic Journal of e-Government* Vol. 3, No. 2, pp 59-66, available online at www.ejeg.com

[22]. Kumar V, Mukerji B, Butt I and Persaud A (2007) "Factors for Successful e-Government Adoption: a Conceptual Framework" *The Electronic Journal of e-Government* Vol. 5, No, 1, pp 63 -76, available online at www.ejeg.com

[23]. Arslan, A.(2007) "Turkish Local e-Governments: a Longitudinal Study" *The Electronic Journal of e-Government* Vol. 5, No. 2, pp 95 -106, available online at www.ejeg.com

[24]. Fasangari, M., Samimi, H .2009. A Novel Framework for M-government Implementation. International Conference on Future Computer and Communication.

[25]. Kushchu, I., Kuscu, H .2007. From e-Government to m-Government: facing the Inevitable. International University of Japan and Southwestern College. Available at: http//:www.mgovernment.org/resurces/mgovlab_ikhk.pdf . [Accessed on Sep 12, 2010]

[26]. Michel H (2005) "e-Administration, e-Government, e-Governance and the Learning City: A typology of Citizenship management using ICTs" *The Electronic Journal of e-Government* Vol. 3, No. 4, pp 213-218, available online at www.ejeg.com

[27]. Backhouse, J. (2007) "e-Democracy in Australia: the Challenge of Evolving a Successful Model" *The Electronic Journal of e-Government* Vol. 5, No. 2, pp 107-116, available online at www.ejeg.com

[28]. Association for Information Systems. Qualitative research in Information Systems, Available at: http//:www.qual.auckland.ac.nz/ [Accessed Sep 7, 2010]

[29]. Islamic Parliament of Iran. 2010. Parliamentary Democracy in Iran. Available at: http//:en.parliran.ir/index.aspx?siteid=84&pageid=3015 .[Accessed on Sep 18, 2010]

[30]. Islamic Parliament of Iran. 2010. Chapter1: General Principles, Article 1. Available at: http//:en.parliran.ir/index.aspx?siteid=84&pageid%=203053#chapter1 .[Accessed on Sep 18, 2010]

[31]. Islamic Parliament of Iran. 2010. Chapter1: General Principles, Article 4. Available at: http//:en.parliran.ir/index.aspx?siteid=84&pageid%=203053#chapter1 .[Accessed on Sep 18, 2010]

[32]. Sadeghnezhad, T., 2008. Iran: ICT Use in Education. UNESCO Meta-survey on the Use of Technologies in Education. pp 59-63. Available at: http//:www.unescobkk.org/fileadmin/user_upload/ict/Metasurvey/IRAN.PDF . [Accessed on Sep 18, 2010]

[33]. Ministry of Science, Research and Technology. 2004. Iranian Information and Documentation Center. Proceeding of the meeting and the workshop on Development of a National IT Strategy. Available at: http//:unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN021357.pdf . [Accessed on Sep 18, 2010]

[34]. Atashak, M., Mahzadeh, P., 2008. E-government Status in Iran (TAKFA plan case study). World Applied Sciences Journal 4, pp 12-20, Available at: http//:www.idosi.org/wasj/wasj3)supplement%202/(3.pdf . [Accessed on Sep 16, 2010]

[35]. Parliament of the Islamic Republic of Iran. 2010. Ministiries of The Islamic Republic of Iran. Available at: http//:parliran.ir/index.aspx?siteid=1 . [Accessed on Sep 16,2010]

[36]. Ashrafologhalaeia, A., 2005. E-Government: E-State in Iran – Administrative Reform Plan.
Bureau for Economic Studies and International Cooperation, Deputy for Economic Affairs and Coordination of Plan and Budget, Management and Planning Organization (MPO). Iran. Available at: http//:www.engagingcommunities2005.org/abstracts/Ashrafologhalaei-Ahmadreza-final.pdf . [Accessed on Sep 17, 2010]

[37]. Sharifi, M., Manian, A., 2010. The study of the success indicators for pre-implementation activities for Iran's E-Government development projects. Government Information. Vol. 27, No. 1, pp 63-69.

[38]. Bertot, JC., Jaeger, PT., Grimes, JM., 2010. Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. Government Information. Vol. 27, No. 3, pp 264-271.

[39]. Tsai, N., Choi, B., Perry, M., 2009. Improving the process of E-Government initiative: An in-depth case study of web-based GIS implementation. Government Information. Vol. 26, No. 2, pp 368-376.

[40]. Everett, L., 2004. What is Government. Australia: Pearson Education. Available at: http//:books.google.com/books?id=cd92AAAACAAJ&dq=what+is+government&hl=en&ei=q16kTMTtAZKTjAfI-N22DA&sa=X&oi=book_result&ct=result&resnum=2&ved=0CCkQ6AEwAQ. [Accessed on Sep 7, 2010]

[41]. Wade, R., Gerald, G., 2010. Critical issues pertaining to the planning and implementation of E-Government initiatives. Government Information. Vol. 27, No. 1, pp 26-33.

[42]. Gottschalk, P., 2009. Maturity levels for interoperability in digital government. Government Information. Vol. 26, No. 1, pp 75-81.

[43]. Skiftenes, L., 2006. The state of G2G development: Maturity levels and current challenges. Americas Conference on Information Systems. Association for Information Systems.

[44]. Mulley, C., Nelson, J., 1999. Interoperability and transport policy: the impediments to interoperability in the organisation of trans-European transport systems. Journal of Transport Geography. Vol. 7, No. 2, pp 93-104.

[45]. Ralyte´, J., Jeusfeld, MA., Backlund, P., Ku¨hn, H., Arni-Bloch, N., 2008. A knowledge-based approach to manage information systems interoperability. Journal of Information Systems. Vol. 33, No. 7-8, pp 754-784.

[46]. Jian-hui, W., Jing-wei, L., Xiao-hui, L., Wei-dong. K., 2009. Fair e-Payment protocol based on blind signature. The Journal of China Universities of Posts and Telecommunications. Vol. 16, No. 5, pp 114-118.

[47]. Kim, C., Tao, W., Shin, N., Kim, K., 2010. An empirical study of customers' perceptions of security and trust in e-Payment systems. Journal of Electronic Commerce Research and Applications. Vol. 9, No. 1, pp 84-95.